State Railway of Thailand

Specification of Commodity and Requirement

Project of Year 2013

"Electric Upper/Under Floor Lifting Jack capacity 16 sets * 12.5 Tons plus 1 set of Bogie Turntable, Extension rail 3 sets, Relocate 1 unit of Bogie Lifting and Support system for Existing mobile lifting jacks at TRACK 22"

Content of

ABSTRACT
PART 1 : Electric Upper/Under Floor Lifting Jack
PART 2 : Bogie Turntable
PART 3 : Extension Rail
PART 4 : Relocate Bogie Lifting
PART 5 : Support system for Existing mobile lifting jacks at TRACK 22

ABSTRACT

State Railway of Thailand wish to select and purchase " Electric Upper/Under Floor Lifting Jack with capacity sixteen (16) sets * 12.5 Tons with plus one (1) set of Bogie Turntable, three (3) sets extension rail, Relocate one (1) unit of existing Bogie Lifting and Support systemfor Existing mobile lifting jacks at TRACK 22.These requirement installed at Maintenance centre (Klongton-Depot) of SRT Electrified Train Co.,Ltd., Bangkok, Thailand.

Supplier must do as below

1. Designed.
2. Provided.
3. Manufacturing.
4. Assembly.
5. Pre-Testing.
6. Delivered.
7. Concrete foundation Work.
8. Civil Work.
9. Electrical construction and Termination.
10. Rail fabrication and welding.
11. Anti-roll off improvement.
12. Installation.
13. Commissioning.
14. Testing.
15. Training course.

Herein, the following abbreviation are used for the convenience as following:

"SRT" is mean "State Railway of Thailand, Bangkok, Thailand"
"SRTET" is mean "SRT Electrified Train Co.,Ltd., Bangkok, Thailand"
"COE" is mean "Council of Engineer of The Kingdom of Thailand"
"EIT" is mean "The Engineering Institute of Thailand Under H.M. The King's Patronage"
"MEA" is mean "Metropolitan Electricity Authority, Thailand"
"TISI" is mean "Thai Industrial Standards Institute, Thailand"
"NEMA" is mean "National Electrical Manufacturers Association"
"NEC" is mean "National Electrical Code"
"VDE" is mean "Verband Deutscher Elektro Techniker"
"IEC" is mean "International Electrotechnical Commission"
"IEEE" is mean "Institute of Electrical and Electronics Engineers"
"DIN" is mean "Deutsches Institut für Normung"
"BS" is mean "British Standards"
"EN" is mean "European Standards"
"ISO" is mean "International Organization of Standardization"
"CE" is mean **"**European Conformity**"**
"NDT" is mean "Non-Destructive Testing"

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PART 1

Electric Upper/Under Floor Lifting Jack
For 4 Cars Unit of Train Model "SIEMENS Deciro360/2"

1. Requirement.

General : One (1) system of Lifting Jack. This system consists of sixteen (16) sets of Electric Lifting Jack and minimum capacity is 12.5 Tons per set, for lifting complete set of "SRTET" (Klongton-Depot) Vehicle [Max four (4) cars per system with eight (8) bogies] at their wheels and support the lifted car-body by electrically adjustable load supports. Installation at TRACK 23 (T23), "SRTET"-Klongton Depot and Jack system must be have Concrete foundation support on the load of vehicles.
System shall meet as below:

1.1 Supplier must Provide completed unit of Electric Upper/Under floor Lifting Jack.
1.2 Supplier must install to desired and proper position.
1.3 Civil work and Concrete foundation are response by supplier. The scope include Surveying, Designed, Materials providing, Construction, Testing, and Official approve follow engineering license from "CEO".
1.4 Supplier must do for Electrical construction completely.
1.5 Supplier must provide Testing and Commissioning with full functions system.
1.6 Supplier must provide Training Course.

2. Specification of commodity.

General : It is the intent of these specification to describe a Electric Upper/Under Floor Lifting Jack with capacity sixteen (16) sets * 12.5 Tons. Material furnished shall be new and at least of standard quality currently used commercially, confirming to current engineering and manufacturing practices. Material shall be free from defects that adversely affect the function or appearance of the finish unit.
Unit have to meet the following minimum specification:

2.1	Capacity dynamic/static of one (1) set of Jack	12.5 Tons.
2.2	Capacity of the entire lifting system dynamic/ Sixteen (16) sets of Jack	200 Tons.
2.3	Motor Capacity per Bogie (2 Sets of Jack) not less than	2*3.0 Kw.
2.4	Lifting and Lowering speed not less than	300 mm./min.
2.5	Minimum Lifting Height	at Rail Level
2.6	Maximum Lifting Height not less than	2,200 mm. from rail level
2.7	Total height of Jack not more than	4,000 mm.
2.8	Weight of one (1) unit of jack not more than	1,500- 1,800 Kg.

3. Description of the individual Lifting Jack Component for Lifting the car at the bogie.

General : Primarily by consistent and features all the same. The production process including raw materials from suppliers who were determined by manufacturer. The sixteen (16) sets of Jack has all the same features from manufacturer. Sample draft of two (2) units of Jack show as Figure 2.
The basis requirement shall meet as below:

3.1 Lifting Columns.
- 3.1.1 Steel Construction Consisting of a large base frame (Steel profile are “DIN” Standard or equal).
- 3.1.2 Rigid Base Plate, Prepared for fixing of the jack on the floor by anchor bolts.
- 3.1.3 Cross-beam bolted to the gantry frames.
- 3.1.4 Transport eye hooks for crane set-up.
- 3.1.5 Painting color of Jacks assigned from “SRT”/“SRTET”.

3.2 Actuating Elements.
- 3.2.1 Each carrying nut (Bronze) is accompanied by a safety nut (Steel).
- 3.2.2 Automatic Lubrication system of Screw unit must be considered.
- 3.2.3 Self-Locking tension loaded Acme Screws (Tr 60*8).
- 3.2.4 Screw with self-aligning roller thrust bearing.
- 3.2.5 Protection boots (above and below) for protection the screw.
- 3.2.6 Low-wear, Smooth-running spur gearing with flange-mounted three-phase induction motor, one (1) set of jack will be operated by one (1) Gear Motor as minimum.
- 3.2.7 High-degree of stop accuracy and safety via electro-magnetic breaker.
- 3.2.8 Safety device for emergency stop, if lifting carriage is block during lowering.
- 3.2.9 Electrical monitoring of Carrying and Safety nut Breakage.

3.3 Lifting Carriages.
- 3.3.1 Welded Construction.
- 3.3.2 Shielded Wheel-flanged rollers with integrated bearing.

3.4 Load Anvil.
- 3.4.1 Fixed design with lifting beams/rail bridge connected to the load anvils.
- 3.4.2 Each of Load Anvil must have Pay load checking sensor.
- 3.4.3 Anti-roll off and Roll off guard.

3.5 Body Support nut.
- 3.5.1 Supporting portal fixed between the two (2) lifting columns with integrated load anvil.
- 3.5.2 The load anvil can be electrically moved forward and backward in order to reach the jack pad at car body.
- 3.5.3 Integration of load anvil is a loaded limit switch.

3.6 Coverage (Checker plate’s fabrication) at each Jacks on ground floor is necessary to filled with safety topic, supplier must response fabricated and installed.
- 3.6.1 Supplier must submit Drawing & Specification of Coverage to “SRT”/“SRTET” for approval before fabricated.

3.7 Vehicle details as ATTACHMENT B
- 3.7.1 ATTACHMENT B1 “4 CAR TRAIN ASSEMBLY (A6Z00000580014)”
- 3.7.2 ATTACHMENT B2 “MOTOR BOGIE 1 (A6Z00000634524)”
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3.7.12 ATTACHMENT B12 “WAGON TOS (A6Z00000580018)”
3.7.13 ATTACHMENT B13 “ADDRESSES A.SIGNS EXTERIOR (A6Z00000585639)”
3.7.14 ATTACHMENT B14 “WAGON DMOS (AV00000580019)”

4. Concrete foundation for each Jacks.

General : Foundation system is configured to meet the needs of both Safety load and Appropriate standard of Civil works. The design and materials of construction, it's important to have a process control from expert. Supplier may supply the domestic construction including raw material. “SRT”/“SRTET” be recognized and affirmed for Concrete foundation and Construction work from a certified engineer who holds a license by “COE”. Position of all Jacks are show in Figure 3.

The basis requirement shall meet as below:

4.1 Supplier must designed proper specification of Concrete foundation and response Civil work according to standard construction with well condition for Sixteen (16) sets of Jack.

4.2 “SRT”/“SRTET” provide reference copies of Civil & Construction drawings as current state of Building following as below (ATTACHMENT A):

- 4.2.1 ATTACHMENT A1 “DEPOT ROLLING STOCK WORKSHOP GROUND FLOOR FRAMING PLAN ZONE 8 (SHEET 8/10)”
- 4.2.2 ATTACHMENT A2 “DEPOT ROLLING STOCK WORKSHOP BOTTOM SLAB REINFORCEMENT EL.+37.42 ZONE 14 (SHEET 2/2)”
- 4.2.3 ATTACHMENT A3 “DEPOT ROLLING STOCK WORKSHOP TOP SLAB REINFORCEMENT EL.+37.42 ZONE 15 (SHEET 1/2)”
- 4.2.4 ATTACHMENT A4 “DEPOT ROLLING STOCK WORKSHOP BOTTOM SLAB REINFORCEMENT EL.+37.42 ZONE 17 (SHEET 2/2)”
- 4.2.5 ATTACHMENT A5 “DEPOT ROLLING STOCK WORKSHOP TOP SLAB REINFORCEMENT EL.+37.42 ZONE 18 (SHEET 1/2)”
- 4.2.6 ATTACHMENT A6 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 15”
- 4.2.7 ATTACHMENT A7 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 16”
- 4.2.8 ATTACHMENT A8 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 17”
- 4.2.9 ATTACHMENT A9 “DEPOT WASTE WATER TREATMENT (ROLLING STOCK)”
- 4.2.10 ATTACHMENT A10 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 21”
- 4.2.11 ATTACHMENT A11 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 22”
- 4.2.12 ATTACHMENT A12 “DEPOT ROLLING STOCK WORKSHOP, WHEEL REPROFILING and TRAINWASH-CLEANING FIRST FLOOR PLAN (ZONE I) (SHEET 9 OF 10)”
- 4.2.13 ATTACHMENT A13 “DEPOT ROLLING STOCK WORKSHOP, WHEEL REPROFILING and TRAINWASH-CLEANING FIRST FLOOR PLAN (ZONE G) (SHEET 7 OF 10)”

4.3 After Supplier signed the contract/received Purchase order, they must submit As built Drawings and completed details of Concrete foundation for each sets of Jack to “SRT”/“SRTET” within fifteen (15) days.

4.4 The final of As built Drawings from (4.3) is acceptance and approval from engineer (he/she is holding with a valid second class level of Engineer license from “COE”).

4.5 The Concrete foundation can be proceeded after “SRT”/“SRTET” agreed in any Term and Condition and refer from (4.3) and (4.4).

4.6 All Concrete foundation have to finished before Lifting Jack ready to install not less than (ninety) 90 days or follow Concrete testing if available.

4.7 Concrete testing report should be done before installed of each jack.

4.8 "SRTET" allowed Supplier to explore the area which beneficial for support civil work and prepared in various ways according to (4.1), (4.2) and (4.3).

4.9 Floor finishing is make the same pattern of previous state. Coating material type & color is upon "SRT"/"SRTET" requirement.

4.10 During construction period, supplier have to fixed authorized person at least one (1) person who is supervised and controlled onsite construction working according to safety manner. "SRT"/"SRTET" required at least engineer level with Engineering license from "COE" or authorized deputy/representative.

4.11 During construction and Civil work if any defected are found on TRACKs/Facilities system/Utilities system and Equipments or Devices, supplier must be notified to "SRT"/"SRTET" within seven (7) days. However, if these defected not from existing material defective then "SRT"/"SRTET" will make claim noticed to Supplier.

4.12 If detail submission of (4.3) need to be updated after proceeding or during work is running. Supplier must have informed to "SRT"/"SRTET" by a letter with reasonable and attached copies of update drawing and detail. After "SRT"/"SRTET" agreed by confirmation supplier can performed accordingly.

4.13 According to a surveying are found to the structure of the whole or part to be prepared to renovate or rebuilt the existing structure to compliance with engineering principle. Supplier must implement and adhere to standards of construction which can not be used as an excuse or a reason to avoid the decline in contract operations.

5. Operating Sequence.

General : The Operating Sequence and Procedures to be followed in order and in accordance with a standard practices of the Lifting Jack system in maintenance field of the railway system. The proposed procedure is a very up to date and contemporary. “SRT”/“SRTET” prefer with satisfaction in the safety and friendly to the user and ease of troubleshooting is not complex.

Operating Sequence/Procedure shall meet the following minimum demanding:

5.1 The Car-body will be raised by the Bogie Lifting units to the maximum position.

5.2 The Linear actuator will be moved by pendant to the extended position (Controlled by limit switch).

5.3 The Bogie lifting units will be lowered again for a small distance until the Car-body is completed loaded by the body support anvil.

5.4 After the load anvil is fully retracted and loaded by the Car-body, the Bogie could be lowered by the Bogie Lifting Jack. If the support is not loaded, a lowering of the Bogie is not possible (Interlocking function is a must).

5.5 In addition to the detailed initial of (5.1), (5.2), (5.3) and (5.4). Supplier can be useful and profitable to use as needed (if any). They can offer in terms of specification/Operation Procedure agreement between the supplier and “SRT”/“SRTET”.

6. Special Rail system Lifting Beam.

General : The special rail was introduced to replace some section of original set that is used now. Installation is a necessity each of Cutting and Decorate the Rail profile, which take responsibility by Supplier. In accordance with the appropriate Drawings and strong as the original model. Details in this section include cutting and welding metals plus improve the load base support as a Civil work.
The basis requirement shall meet as below:

6.1 The System is designed with a Special Rail system, The Car run on the total length of the installation on the Wheel-treads. In the area of the lifting beams, the Bogie will be lifted at the remaining tread surface by lifting beams.

6.2 The foundation for the special rail system in the area of the lifting beams must be prepared by Civil work of Supplier according to the Sketch of Special Rail Profile in the area of the lifting beam.

6.3 The Special Rails are in scope of Supplier and will be welded on the welding ground to be supplied by Civil work as per sketch of Figure 1.

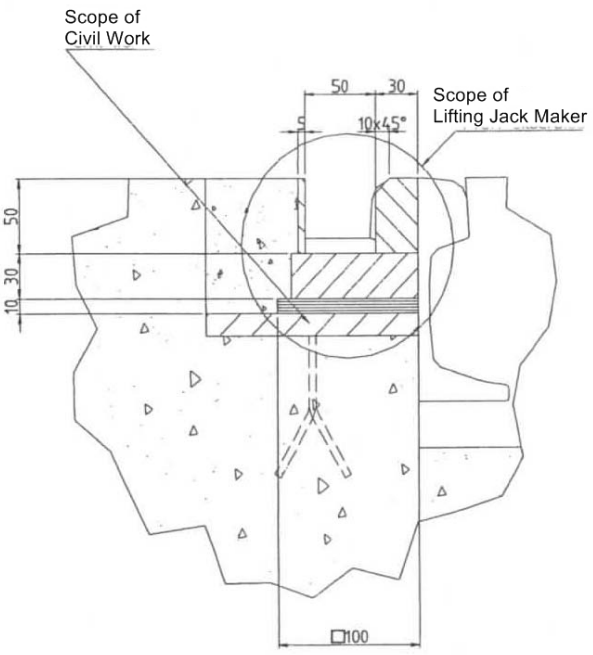

Figure 1. : Sketch of special rail profile in the area of the lifting beam.

6.4 Each Lifting Beam is equipped with automatic working anti roll of devices. The wheel tread are embedded in a special machined pocket for anti roll of function.

6.5 During installation Special Rail if any defected are found on existing rail, supplier must be notified to "SRT"/"SRTET" within seven (7) days. However, if these defected not from existing material defective then "SRT"/"SRTET" will make claim noticed to Supplier.

7. Electrical Supply and Control for The Operation of (sixteen) 16 sets of Lifting Jack.

General : Qualifications and requirements for control system, it is designed and configured to meet the specifications of manufacturer's standard. Automatic control must comply with standard and safety of the Lifting Jack system in Railway sector. Most of Electrical, Electronic, Mechatronic and Computer control equipment have to sophisticated products and the most world-wide used. In addition to, supplier must do complete of dismantle old parallel of power and control cable at TRACK 23 (T23).
The basis requirement shall meet as below:

7.1 Control Cabinet : for the following functions
- 7.1.1 Lockable main switch.
- 7.1.2 Selection for choice of individual, group mode, set of group of jacks for lifting the requested number of Bogie by Touch screen panel (HMI-Human Machines Interface).
- 7.1.3 Group mode follow according to the selection made at the control console.
- 7.1.4 One (1) Emergency shut-off button at each Jack.
- 7.1.5 Indicator lamp for display of fault message.
- 7.1.6 Total connected Value for 8 Bogie not less than 16 x 3.0 Kw.
- 7.1.7 Operating Voltage : 24 Vdc.
- 7.1.8 Protection class of Motor IP55.
- 7.1.9 Additional the Gear Cam Limit Switches are equipped with encoders, which provides exact information about the heights of all participating lifting platforms.
- 7.1.10 The Synchronization of the Jack can be regulated within an area of ±4 or ± 5 mm.
- 7.1.11 When a maximum deviation in the system's synchronization of ±10 mm. occur, the jacks automatic shut-off.
- 7.1.12 Each Jacks are equipped with a flash light which lights up during operation.

7.2 The Following safety features will be indicated on the Control console.
- 7.2.1 Emergency-Stop, All-pole effective.
- 7.2.2 Motor Protection via excess current release.
- 7.2.3 Upper 150 mm. (maximum), Lower operating Limit Switch.
- 7.2.4 Upper/Lower safety Limit Switch.
- 7.2.5 Wear Nut Monitoring.
- 7.2.6 Monitoring travelling Nut lift-off.
- 7.2.7 Contactor Control that the control system monitors whether any of contactors of the Jack actuator motor become stuck.
- 7.2.8 Limit Switch "Loaded" on body supports.
- 7.2.9 Rotation Monitoring of each screw.
- 7.2.10 Automatic Synchronization monitoring of joint-operated lifting platforms (realized by PLC-Programmable Logic Controller) tolerance ±4 or ± 5 mm.
- 7.2.11 Lowering movement 150 mm. (maximum) to 0 after simultaneous pushing of two buttons at Single Vehicle Master Control Station.
- 7.2.12 Release remote control pendant for group mode.
- 7.2.13 Alarm function by Sound and Light.
- 7.2.14 Operation hour counter via Touch Screen Panel (HMI-Human Machines Interface).
- 7.2.15 The Electrical Control is build and inspected according to the VDE and EN 1493 and EC Machinery Directive 2006/42/EC Standard.
- 7.2.16 The Fault-message and Synchronization level are full-proof against any Voltage loss.

7.2.17 The Operation of the Group of Jacks will be done by a Control pendant according to the pre-selection made at the Touch Screen Panel of the Main Control Cabinet.

7.2.18 The Control pendant is equipped with buttons for Up/Down and an Emergency button.

7.2.19 The Control pendant can be connected to a socket at Main Control Cabinet.

7.3 The Control Panel, which are built on to every Jacks have the following function or Lamp monitors.

7.3.1 One (1) Emergency Shut-off.

7.3.2 Indicator Lamp “Loaded” when support anvil is loaded by the Carbody.

7.3.3 Emergency Shut-off on the Jack has been activated (Red Lamp).

7.3.4 Additionally there are push buttons integrated for load anvil forward/backward.

7.4 Power Supply and Connected cable.

7.4.1 “SRTET” will provide Main Supply circuit for Main control cabinet of The Lifting Jack.

7.4.2 “SRTET” reserved Power Electrical circuit at existing Distribution Panel, mentioned Distribution Panel name is UW. In addition to , “SRT”/“SRTET” will provide reference copies of As built Drawings for Power supply and Location as below (ATTACHMENT A):

7.4.2.1 ATTACHMENT A14 “DEPOT WASTE WATER TREATMENT (ROLLING STOCK)”

7.4.2.2 ATTACHMENT A15 “ROLLING STOCK WORKSHOP LV LAYOUT UW (SHEET 1 0F 1)”

7.4.2.3 ATTACHMENT A16 “ROLLING STOCK WORKSHOP LV PANEL BOARD, UW (SHEET 1 0F 2)”

7.4.2.4 ATTACHMENT A17 “ROLLING STOCK WORKSHOP LV PANEL BOARD, UW (SHEET 2 0F 2)”

7.4.2.5 ATTACHMENT A18 “ROLLING STOCK WORKSHOP SINGLE LINE DIAGRAM/PANEL BOARD, UW (SHEET 1 0F 1)”

7.4.3 The Cable supply from Main Supply circuit to Main Control Cabinet and Control box of each jacks is supply and done by Supplier. In addition to, supplier must do following:

7.4.3.1 Designed, Provide, Supply and Installation of Mold Case Circuit Breaker (MCCB) which proper power demanding capacity of Lifting Jack system as used for Distribution Board UW.

7.4.3.2 Designed, Provide, Supply and Installation of Cable Ladder /Trunking/ Conduit/ Junction Box from Distribution Board UW to drop point location that need a continued in underground pattern to Main Control Cabinet of Lifting Jack system.

7.4.4 The Cable root on above (7.4.3.2) from drop point to Main Control Cabinet of Lifting Jack system is keep in a standard of underground pattern, designed, providing, supply and installation by supplier.

7.4.5 The Cable root on above (7.4.3) from Main Control Cabinet Control to Control box of each jacks is keep in a standard of underground pattern, designed, providing, supply and installation by supplier.

7.4.6 The Cable length from the location of the Main Control Cabinet to the individual Jacks must be isolated.

7.4.7 The Connection cable, in standard design are hard-wire directly to the Control box on each Jacks and to the terminal of the Main Control Cabinet.

7.4.8 Connection for each jacks must use with Connector under standard of IP55.

7.4.9 The Electrical Construction of Power supply system and Underground pattern, Supplier must submit Designed’ s drawings and detailed of material to “SRT/“SRTET” before start

work, “SRT/“SRTET” will approved final drawings and accepted all specification of material from supplier’s details by confirmation.

7.4.10 Those Electrical equipments and accessories like as Power Cable, Mould Case Circuit Breaker (MCCB), etc. “SRT/“SRTET” respected with Device standards, Installation and Safety discipline are concerned with some standard as below:

7.4.10.1 EIT

7.4.10.2 MEA

7.4.10.3 TISI

7.4.10.4 NEMA

7.4.10.5 NEC

7.4.10.6 IEC

7.4.10.7 IEEE

7.5 Supplier must dismantle existing underground cabling and all sockets of parallel systems at TRACK 23 (T23) connection that goes through to original feature and functional of main control panel at TRACK 24 (T24). It will be under the operational control and supervised by “ SRTET”.

7.6 Supplier must dismantle existing of termination for cabling from TRACK23 (T23) to main control panel at TRACK 24 (T24). Demolition within the main control cabinet and consistent with approach of (7.5). It will be under the operational control and supervised by “ SRTET”.

7.7 After completed of (7.5) and (7.6) the old function of Existing mobile lifting jack must be operate normally at one side performance by cabling of TRACK 24 (T24)’s side. It will be under testing by “ SRTET”.

7.8 During operation along this contract, whether the construction/installation/testing of any system, Existing mobile lifting jack on controlled by cabling from one side of TRACK 24 (T24) will still work as normal after achieving of (7.5), (7.6) and (7.7).

7.9 If there is a need to suspend have use of (7.8) which are necessary to the operation. Supplier must be given reasonable and explanation of a need by the letter to “SRTET”.

7.10 During Electrical construction, Termination and Testing if any defected are found on TRACKs/Facilities system/Utilities system and Equipments or Devices, supplier must be notified to “SRT”/“SRTET” within seven (7) days. However, if these defected not from existing material defective then “SRT”/“SRTET” will make claim noticed to Supplier.

8. Safety measures, Regulation and Testing.

General : The standard Safety measures, Regulation and Testing shall be subject to inspection or test by the Commercial alliance prior to acceptance. In the even supplier of manufacturer ,equipment or some defective in material or workmanship or otherwise not in conformity with specification requirement, the Commercial alliance shall have the right to reject the items or require acceptable correction at before shipment to “SRT”/“SRTET”.
The basis requirement shall meet as below:

8.1 The Entire lifting system is built and tested according to;
- 8.1.1 BS EN ISO 1493-2010 “Vehicle Lifting Platforms”.
- 8.1.2 EN ISO 13849 “Safety of Machines”.
- 8.1.3 EN 60204 T1/T32 “Electrical Equipment of Machines”.
- 8.1.4 VDE 0100 T1/T726 “Jacking and Hoisting Equipment”.
- 8.1.5 The Machinery Directive 2006/42/EC “Machinery Directive”.
- 8.1.6 Completeness Check.
- 8.1.7 All function test of the system will be done.
- 8.1.8 All Dimension Check will be done.
- 8.1.9 For Lifting Jack, the following test at the Supplier Factory (FAT) shall be done.
- 8.1.10 Leveling and alignment need test plus report at before and after lift up train.
- 8.1.11 Additional required of (8.1.10) is “SRT”/“SRTET” need lift up train and hold it up with in twenty-four (24) Hours before lift it down plus report of Leveling and alignment after this.
- 8.1.12 Testing Function as Table 1.

Function	Testing Detail
Lifting and Lowering without Load	Lifting in completed working rage.
Check of the Lifting and Lowering Speed with nominal Load	±20 mm. per min.
Dynamic Lifting with 25% overload for 10 minutes	Function fulfilled without any visible permanent deformation.
Static loading with 50% overload for 10 minutes	Function fulfilled without any visible permanent deformation.
Safety devices	Functional test.
Group operation	Can be performed.
Test of automatic synchronization rage of ±4 or ± 5 mm.	Can be performed.
Rail width (on TRACK)	Report of standard gauge measurement.
Rail bridge width (at machine)	Report of standard gauge measurement.
Rail width combination (TRACK and machine)	Report of standard gauge measurement at same alignment both TRACK and machine.
Leveling and Alignment	Report of Leveling at Before, during and after hold up 4 cars in 24 hrs.
Concrete Test	Report of concrete testing.
Electrical insulation test (Main supply)	Report of Insulation testing.
The test above have to done in house and completed installation at SRTET’s site.	

Table 1. : Lifting Jack system Testing details.

9. Supply Record/Past achievement.

General : The background of manufacturer and Quality certification are qualified program for systems of Lifting Jack in Railway sector which is widely used internationally and without being prosecuted in terms of the defect of the products. Supplier in Thailand is a Representative or Distributor from Lifting Jack's Manufacturer must have a good track record with the Public trading/Government/State Enterprise and have no history of bankruptcy proceedings in the past.

The basis requirement have to meet as below:

9.1 A list of manufacturer record and performance Certificates of the clients not less than four (4) Countries with good track record in Railway sector (mentioned in Train Lifting Jack's products only).

9.1.1 The delivery of record system of lifting system for rolling stock supply to Australia, USA, Canada, Japan, South of Korea, Singapore, Malaysia and European Countries. The delivery record supplying to the others countries on above and The delivery record before A.D. 2000 are not acceptable.

9.1.2 Supplier must attached one (1) set of copy letters of (9.1.1) for Bidding/Tender/Auction and each different of letters must proved by Official company's sealing of clients/Railway operators.

9.1.3 Mentioned Project in past achievement would require a individual contract valued at no less than ten (10) million BAHT of them, in the date of signing the contract only.

9.1.4 Supplier must attached one (1) set of copy concerned evidences of (9.1.3) for Bidding/Tender/Auction and each different of letters must proved by Official company's sealing of clients/Railway operators.

9.2 The Lifting Jack system shall be one of the Main products of the manufacturer with ISO 9001 is required.

9.2.1 Supplier must attached one (1) set of copy of Certificate for Bidding/Tender/Auction.

9.3 The supplier/agent in Thailand must have authorized from manufacturer.

9.3.1 Supplier must attached one (1) set of copy of Certificate/Letter for Bidding/Tender/ Auction.

10. Warranty and Claim.

General : The Lifting Jack system shall be fully warranted against defective material and workmanship for a period of at least one (1) year. The warranty shall begin the date the system is completed of installation and commissioning at “SRTET” (Klongton-Depot). A warranty Card or Certificate shall be provide accordingly.
The basis requirement have to meet as below:

10.1 The Lifting Jacks system is required one (1) year of warranty after completed of commissioning and testing, refer effective date is form Acceptance sheet.

10.2 During warranty period, “SRT”/“SRTET” refuses any cost of expense from supplier if any cases out of warranty notice.

10.3 During warranty period if have any delayed of service activities from Supplier after both of parties are conclude, The mentioned expense and charge shall be paid to “SRT”/“SRTET” within one (1) month from the date of notification.

11. Transportation and Packing/Unpacking.

General : The supplier shall be fully responsible for all shipment and freight charge/sea voyage and filing freight claims lies is also. The consignee is “SRTET” (Klongton-Depot). Packing/Unpacking is done completely with any expense of supplier.
The basis requirement have to meet as below:

11.1 Packing from manufacturer, The Lifting Jack shall be carefully packed and protected for sea voyage/ Domestic logistic. Supplier must response for all parts be delivery to “SRT”/“SRTET” in good and proper conditions and ready to be installed.

11.2 Unpacking at “SRTET” (Klongtan Depot), Supplier must response for Heavy machinery, auxiliary equipment and man power to unpacked and place any part at assign place. If damage of Jacks are found or “SRT”/“SRTET” ’s properties or assets are damage from unpacking and carrying-in cases, Supplier shall replace the defective part/property and asset’s value of all cost to “SRT”/“SRTET” with the least possible, root cause and reasonable delay letter.

11.3 Lifting Jacks system shall be qualified via “CE” certificated.

12. Installation Facility.

General : "SRTET" provide facilities along with installation and construction of the civil works. Where one exists in our Main Depot (Klongton Depot). Supplier should be able to determine the concerned of facilities and other related equipment for pre-installed as well. "SRT"/"SRTET" denied compensation costs or otherwise as to the installation subject.
The basis facilities and Support unit as below:

12.1 Power Supply.
- 12.1.1 "SRTET" provide Electricity with AC 400 Volt/3 Phase., N+E, 50 Hz. are be able connected with power socket 3P+N+E as capacity 32 Amps type.
- 12.1.2 Each Power socket of (12.1.1) can reserved as needed.
- 12.1.3 If Supplier have requested capacity more higher than (12.1.1), they must provide auxiliary units like as Generator, Cable and Circuit Protection to support by themselves.
- 12.1.4 "SRTET" not allowed to modify Ring-main circuit from Main Distribution Panel/Distribution Board.

12.2 Overhead Crane.
- 12.2.1 "SRTET" provide Overhead Crane as below (only at installation area).
  - 12.2.1.1 One (1) unit of Capacity SWL 10 Ton.
  - 12.2.1.2 One (1) unit of Capacity SWL 3.2 Ton.

12.3 Temporary Workshop & Storage.
- 12.3.1 "SRTET" will provide temporary area that facilitate for working during installation as per scheduling.

12.4 Besides of (12.1) and (12.2) must in charge by supplier.

13. Manual.

General : The Manual is standard principle of manufacturer which will be presented and delivered via ordering. “SRT”/“SRTET” prefer to have Operator manual, Parts book and Service manual which appropriate to their needs. All manual shall be furnished with each unit. In addition of all Parts book and manuals must be current with unit delivered.
The basis requirement have to meet as below:

13.1 Supplier have to delivery three (3) of copies of details concerned document to “SRT”/“SRTET”. The bilingual is Thai and English as per set of copies.

13.2 Copy pattern of document of (13.1) is prepared for “SRT”/“SRTET” with both of Hard copies and Soft copies.

13.3 Supplier must submit of (13.1), (13.2) with in thirty (30) days after Acceptance record is done.

14. Commission and Training.

General : Commissioning must comply with the standard profile of each device. Supplier shall submit a detailed work prior to commissioning to “SRT”/“SRTET” within fifteen (15) days before Commissioning program started. The commissioning process must be completed prior to testing with Rolling Train (4 cars). If there is an error in the description of the commissioning, it must be completely revised and updated within a given period (supplier shall fixed that period). The training is a specific topic from the manufacturer, which must be filed to “SRT”/“SRTET” at least fifteen (15) days before start training course.
The basis requirement have to meet as below:

14.1 Supplier have to commissioning and local training at “SRTET” after installed to “SRT”/“SRTET” ’s engineer(s) not less than five (5) days.
14.2 Trainer(s) is authorized person from manufacturer only.
14.3 Training course expense, miscellaneous cost and concerned cost is response by Supplier.

15. Submission.

General : To submit documents related to an effective implementation and monitoring missions in the first act. “SRT”/“SRTET” will have to check the validity of the regulations and practices in force. The process is carried out according to regulations, both before and after. Supplier will be taken to comply with the requirements strictly.

The basis requirement have to meet as below:

15.1 Supplier must submit design drawings and specification of system of Jacks within fifteen (15) days to “SRT”/“SRTET” after signed the contract/received Purchase order from “SRT”/“SRTET”.

15.1.1 Final Drawing and specification of system of Jacks will approved from “SRT”/“SRTET” before supplier start to produced.

15.2 Supplier must send full details of Concrete foundation Drawing (As built Drawings) both of hard copy and soft copy to “SRT”/“SRTET” within fifteen (15) days after signed the contract/received Purchasing order from “SRT”/“SRTET” and refer to (4.3).

15.3 Concrete foundation have to approved by local engineer (Valid License from “COE” is a must and holding with second class level or higher) and make copies of inspection sheet to “SRT”/“SRTET” after he/she have done.

15.4 Concrete testing report should be done before installed of each jack. Supplier will make a copies of report to “SRT”/“SRTET” before installed each Jacks also.

15.5 All of any copies of final As built Drawings, Final of specification of Jack system and Drawings, Concrete testing report, Leveling/Alignment report and commissioning/Testing Report are proved and confirmed with Official company’s sealing.

15.6 All of any Manual copies of (13).

15.7 The final release edition of (15.5) and (15.6) must submit to “SRT”/“SRTET” within thirty (30) days after acceptance record is done.

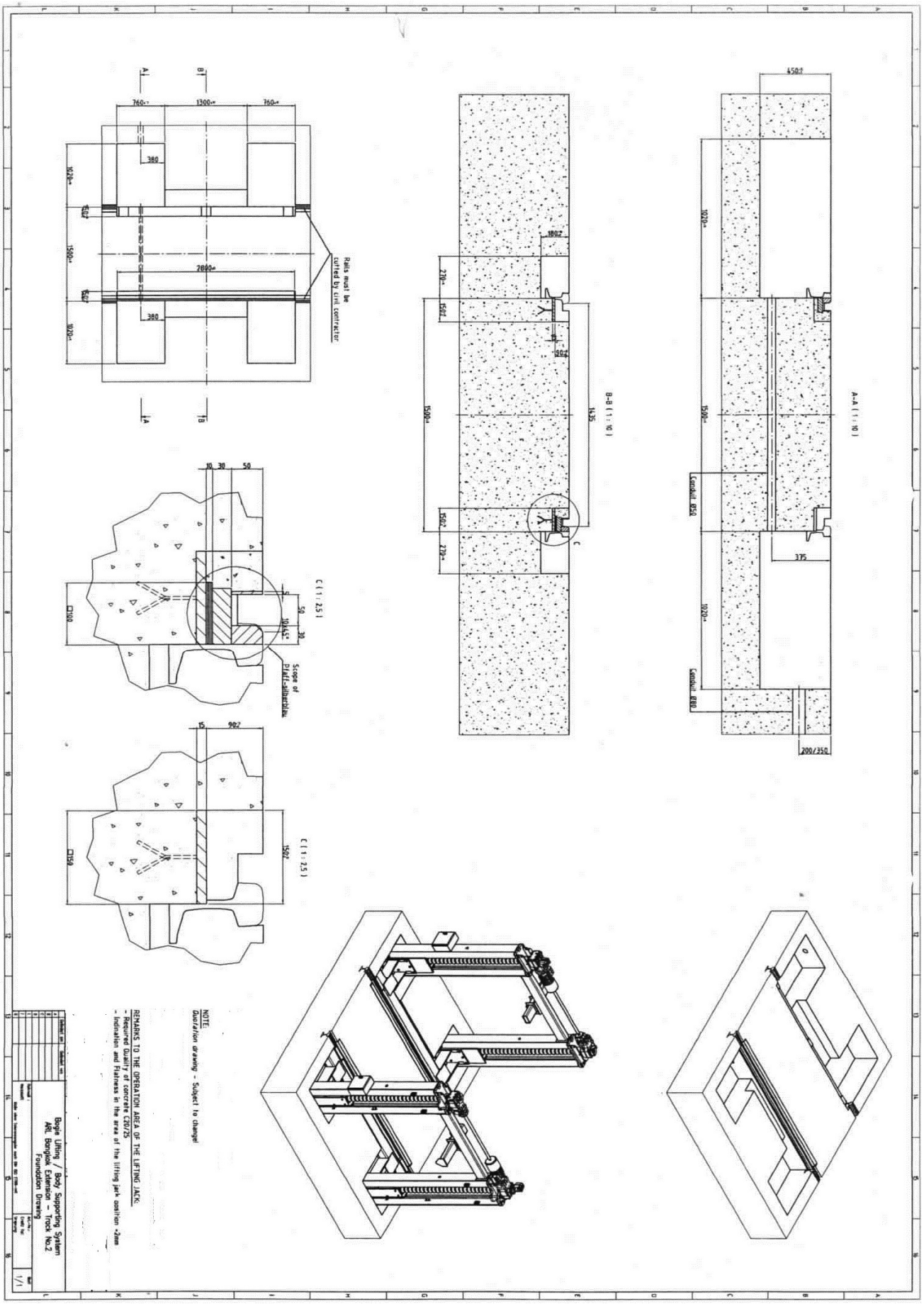
Bogie Lifting / Body Supporting System
ARL Bangkok Extension - Track No.2
Foundation Drawing
NOTE
Illustration drawing - Subject to change!
REMARKS TO THE OPERATION AREA OF THE LIFTING JACKS:
- Required Quality of concrete C20/25
- Inclination and Flatness in the area of the lifting jack position +2mm
Rails must be cutted by civil contractor
Scope of Prefabrication
B-B (1 : 10)
A-A (1 : 10)
C (1 : 2.5)

Figure 2. : Sample pattern of two sets of Jack.

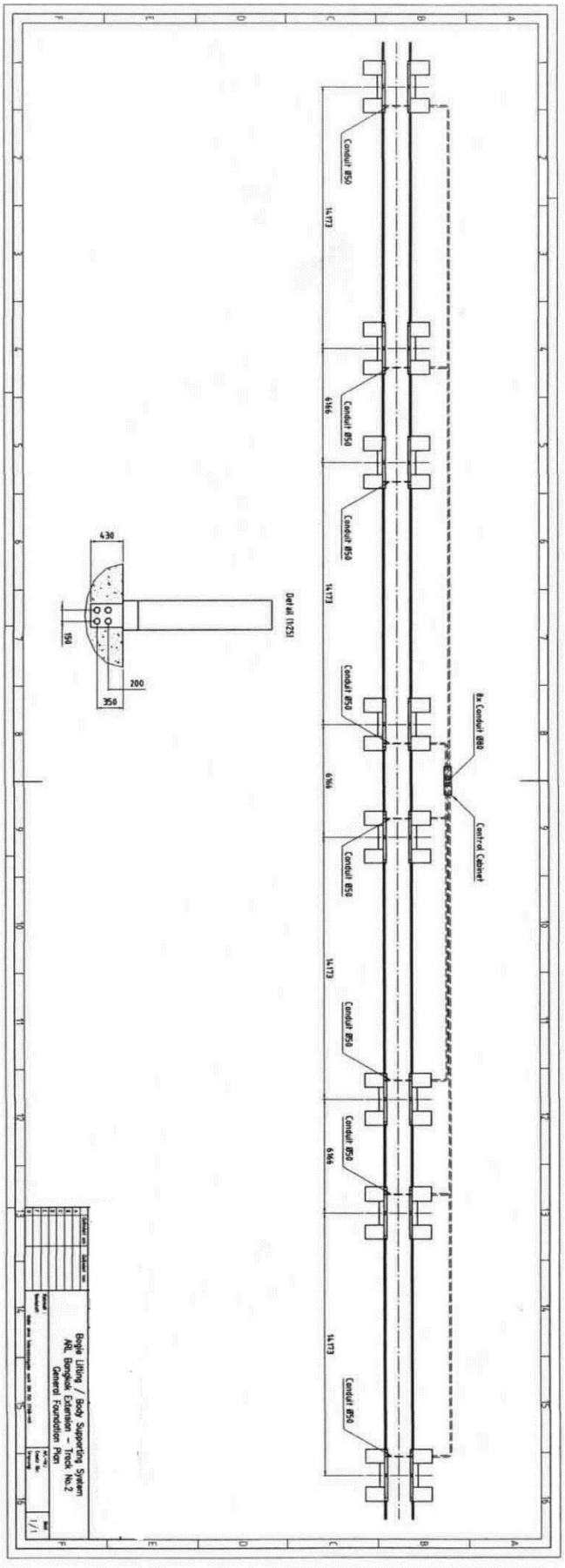

Figure 3 : Sample Layout of Positioning of each Jacks.

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END OF PART 1

PART 2

Bogie Turntable
Manual Turntable for Bogie unit 10 tons

1. Requirement.

General : One (1) set of Manual Bogie Turntable for Bogie unit 10 tons with TRACK width of 1,435 mm. ("SRTET"-Airport Rail Link's Standard gauge) and installed to TRACK 23 (T23) at "SRTET" (Klongtan Depot) according to our reference Figures and Drafting. The Bogie Turntable is equipped with locking unit which centre and fixes the Bogie Turntable in the required limit position with a tipping sheet steel. Before turning, the locking device is released by the operators manually.
The requirement shall as below:

1.1 The Bogie Turntable one (1) set with a diameter 3,400 mm. are fixed to the Concrete foundation.
1.2 Turning by center pin design.
1.3 The Bogie Turntable are equipped with rail cross and manually operated locking devices.
1.4 Operation via retractable push bar and locking devices every ninety degree (90°). The push bar is stored inside the Bogie Turntable under a cover plate with hinges.
1.5 The locking of the Bogie Turntable every ninety degree (90°) must be performed manually.
1.6 Design with machined rail profile (Radius is close to UIC60). The rail profile will be welded on the Bogie Turntable frame.
1.7 The cover plate on the Bogie Turntable is checker plate with anti slip surface. The thickness of checker plate is 8 to 10 mm. with stiffener underneath.
1.8 The roll-cover capacity of the cover plates is three (3) tons minimum per wheel.
1.9 At one cover plate three lifting lugs are provided to take out the cover plate in case of maintenance at the support rollers.
1.10 The Bogie Turntable will be painted as required in the specification by one layer of primer and two layers of final paint, each with thickness of 40 µm.(micro-millimeters). The color type is RAL is according to "SRT"/ "SRTET" requested.
1.11 Supplier must install The Bogie Turntable to desired and proper position.
1.12 Civil work and Concrete foundation are response by supplier. The scope include Surveying, Designed, Materials providing, Construction, Testing and Official approve follow engineering license from "CEO".
1.13 Supplier must provide Testing and Commissioning with full functions system.
1.14 Supplier must provide Training Course.

2. Technical Data

2.1	Type of Turn table	Flush-mounted Turntable
2.2	TRACK width	1,435 mm. ± 1.5 mm.
2.3	Carrying capacity for crossing	100 Kn.
2.4	Carrying capacity for turning	100 Kn.
2.5	Loading Capacity of the cover (wheel load) as minimum	30 Kn. /Wheel
2.6	Turntable diameter	3,400 mm.
2.7	Rail system	Rail cross
2.8	Position of Turntable (Lockable and hand operated) Refer to main	0°/every 90°/360° total manually operated.
2.9	Variation of horizontal and vertical alignment of Turntable rails (under full load condition)	±3 mm.
2.10	Gap between Turntable cover and shop floor	10 mm. as maximum.
2.11	Gap between Turntable and shop rail	10 mm. as maximum.
2.12	Number of adjacent rail TRACKs	2/3/4 connecting rail TRACKs.
2.13	Number of castor	8 castors as minimum.
2.14	Positioning at adjacent rail TRACKs hinged lock device	Manual positioning by hinged lock device.

3. General dimension.

The General dimension is show at Figure 4.

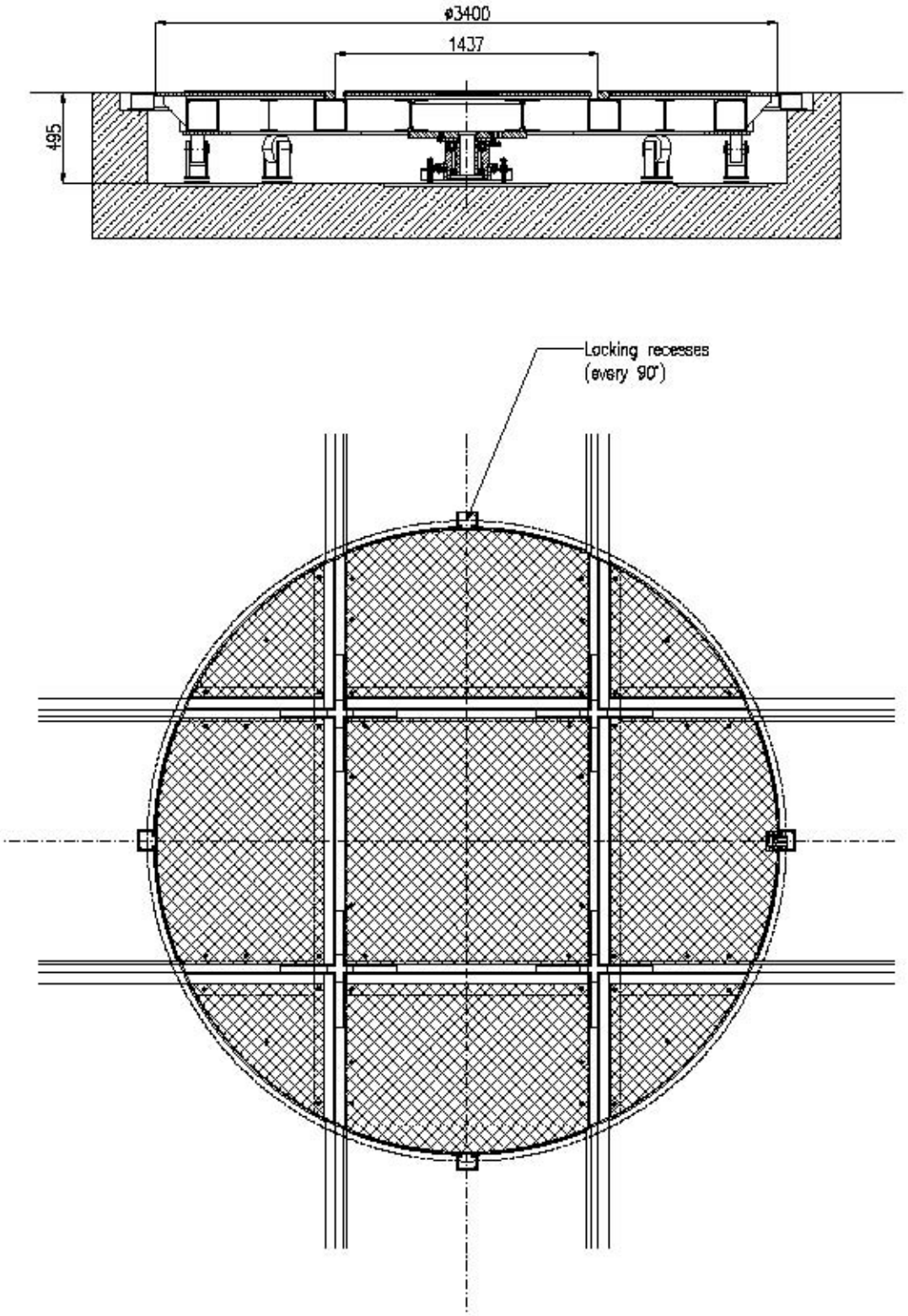

Figure 4. : Side View and Top view with dimension of Bogie Turntable layout.

4. Locking.

The Locking mechanism of the turntable will be effected via a locking wedge. This locking wedge has to be positioned in the respective recess. In the edge angle four locking recesses are mounted. Unlocking operation of the locking wedge is effected manually by hand.
The turning of the Bogie Turntable will be effected via pushing the bogie to the desired position. If the bogie is in the correct position, the Bogie Turntable has to be locked via manual tipping of the locking rod inside the respective locking recess.
At the locking wedge two screws and nuts are mounted, which enable an exact adjustment of the wedge inside the recess. The details is show as below of Figure 5.

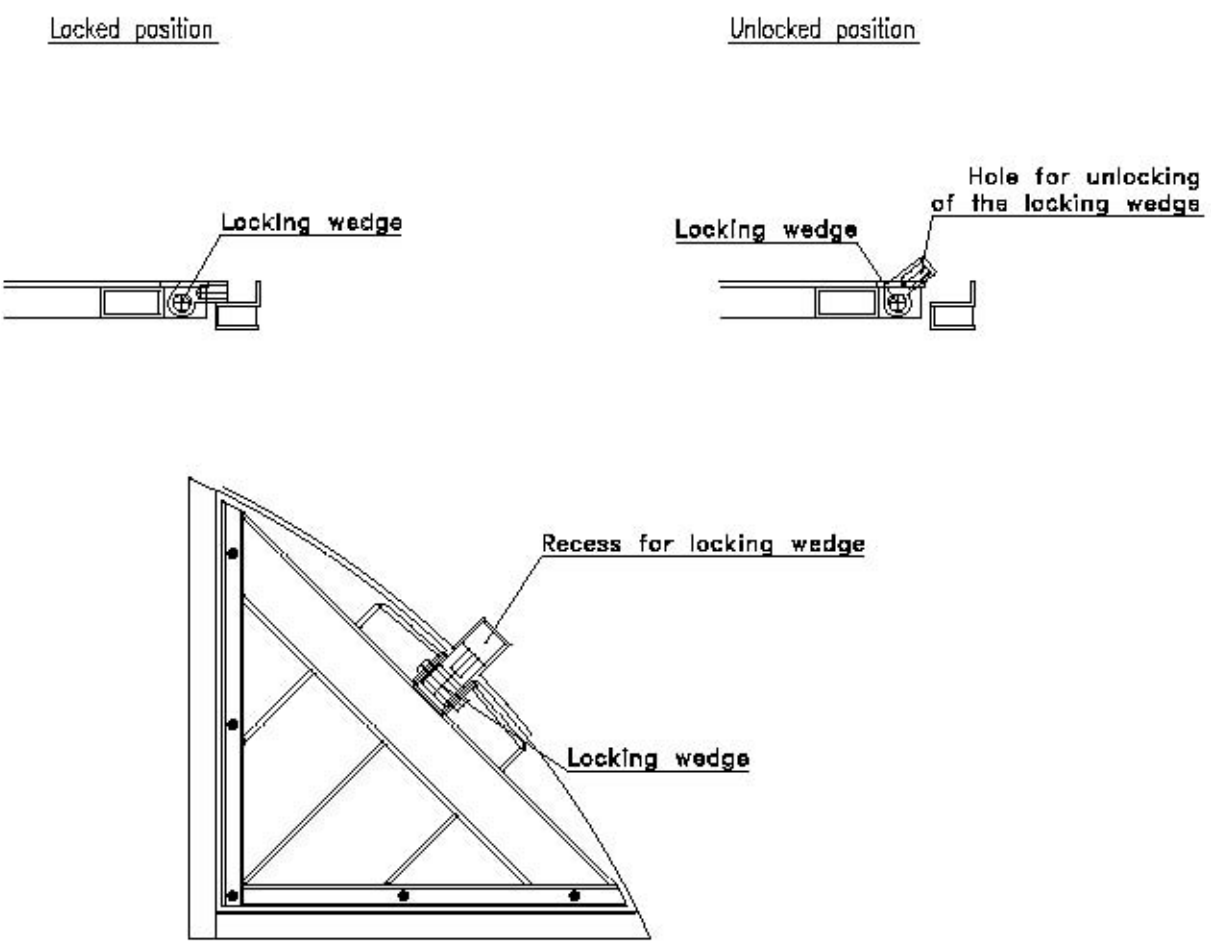

Figure 5. : Locking wedge and Locking-Unlocking position.

5. Centre pin with bearing.

The spherical roller bearing of the centre pin unit and each bearings are from “SKF” or “FAG”. For the lubrication of the axial bearing, a lubrication nipple is mounted on to each of the centre pin bearing housings. The details show as below of Figure 6.

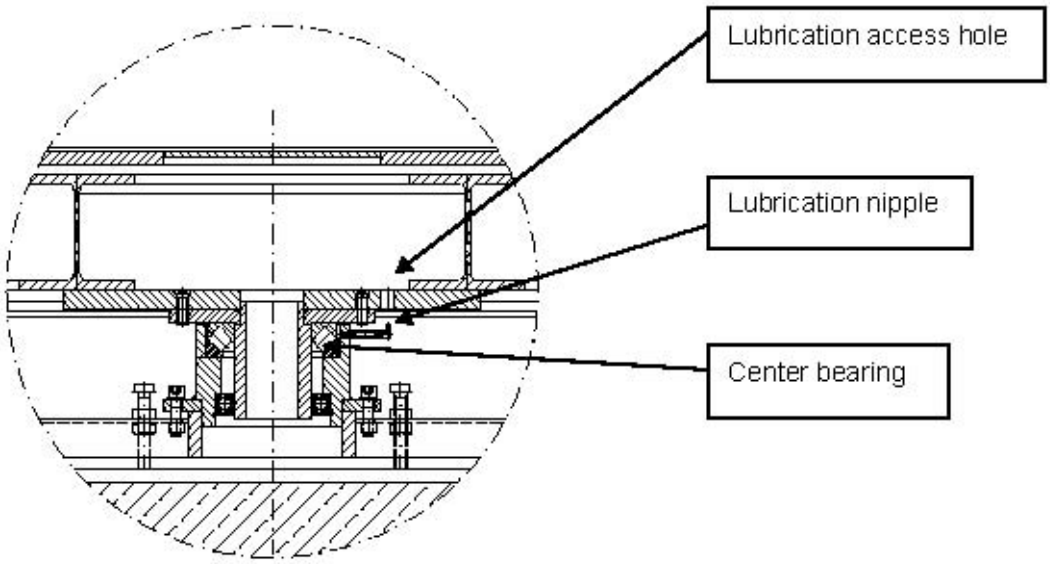

Figure 6 : Centre pin and Central Bearing with Lubrication way.

6. Bogie Turntable feature.

General Drawings and sample unit picture as Figure 7, 8 ,9 and 10.

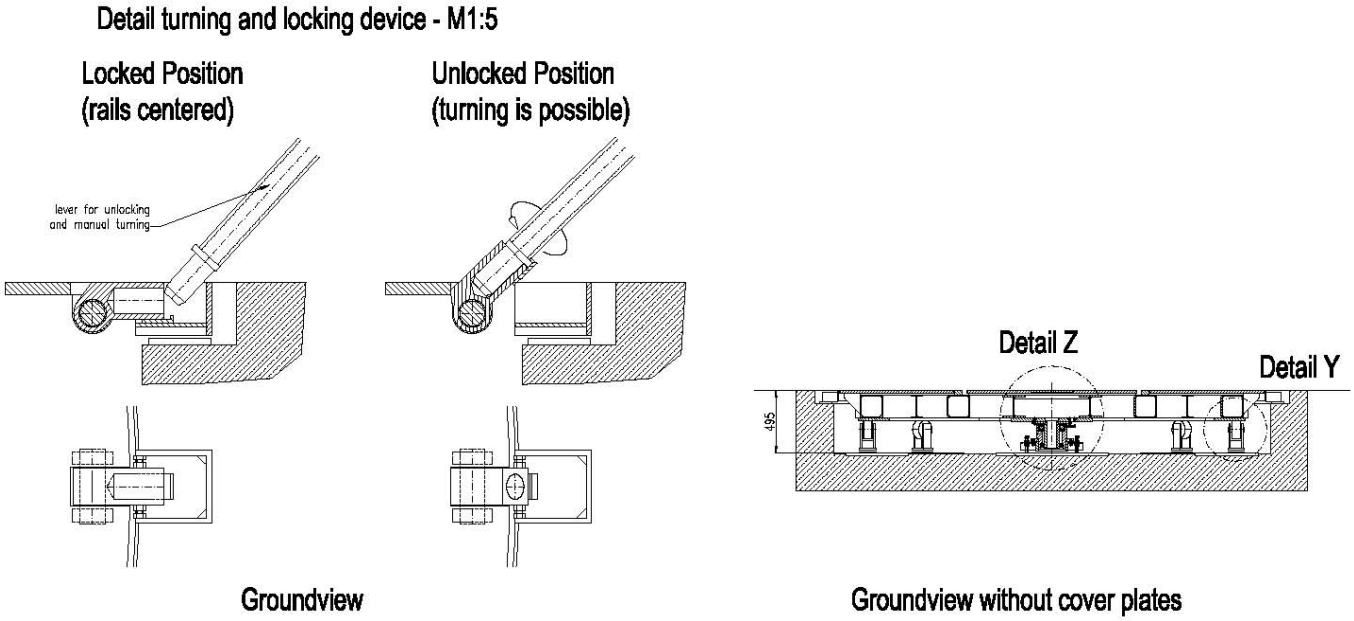

Figure 7. : Locking-Unlocking Position with Detail of Centre bearing and roller bearing.

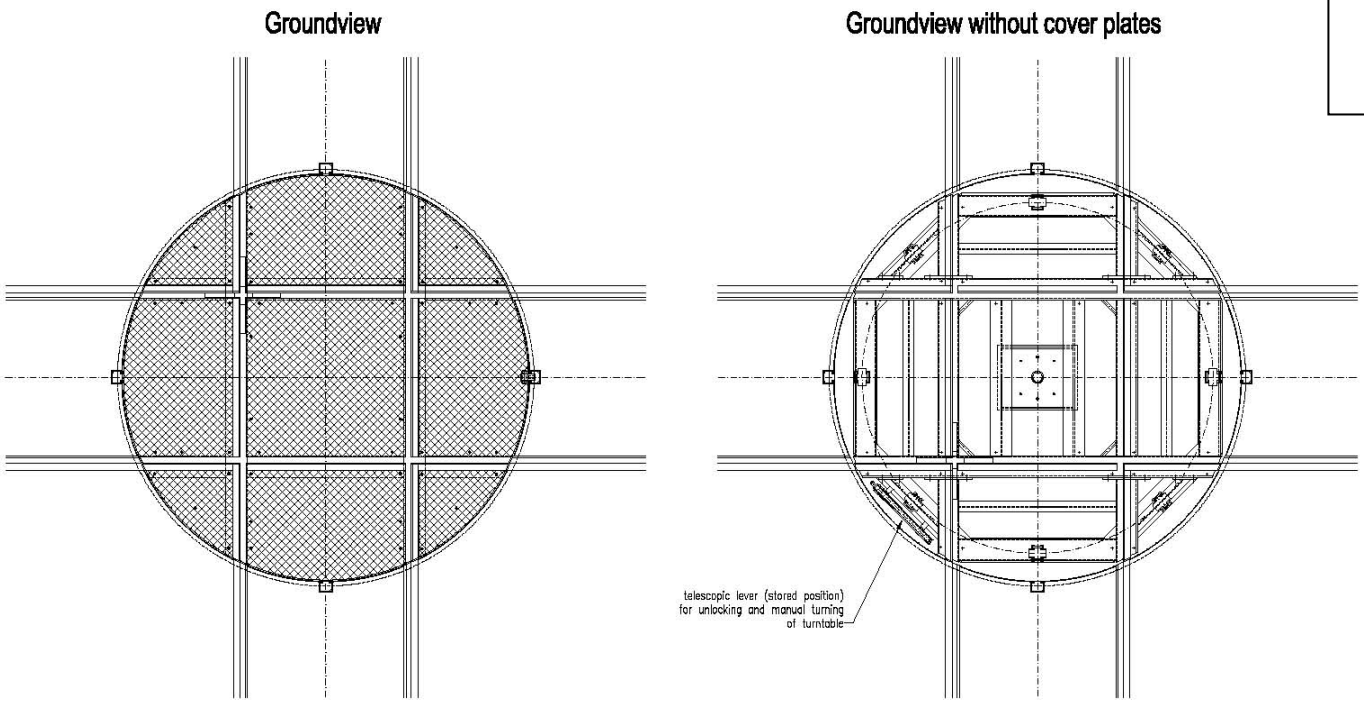

Figure 8. : Top view of Bogie Turntable layout.

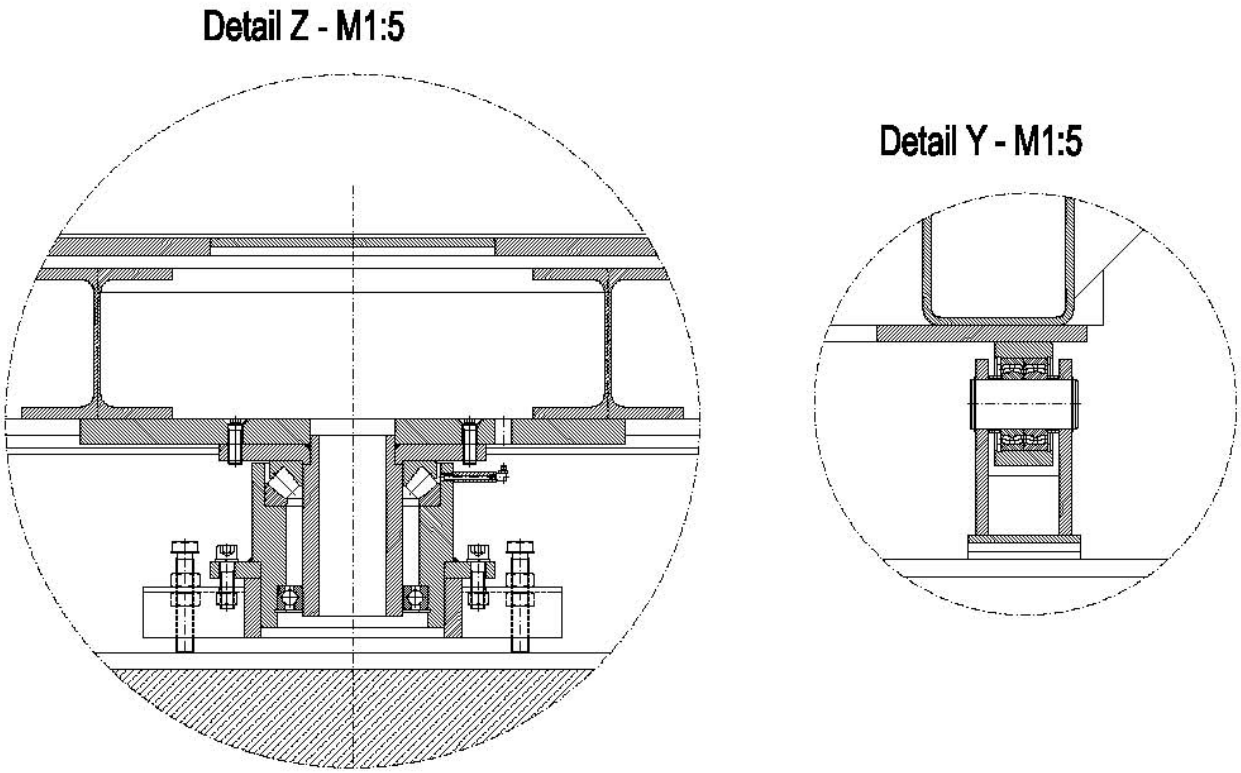

Figure 9. : Detail Z and Detail Y.

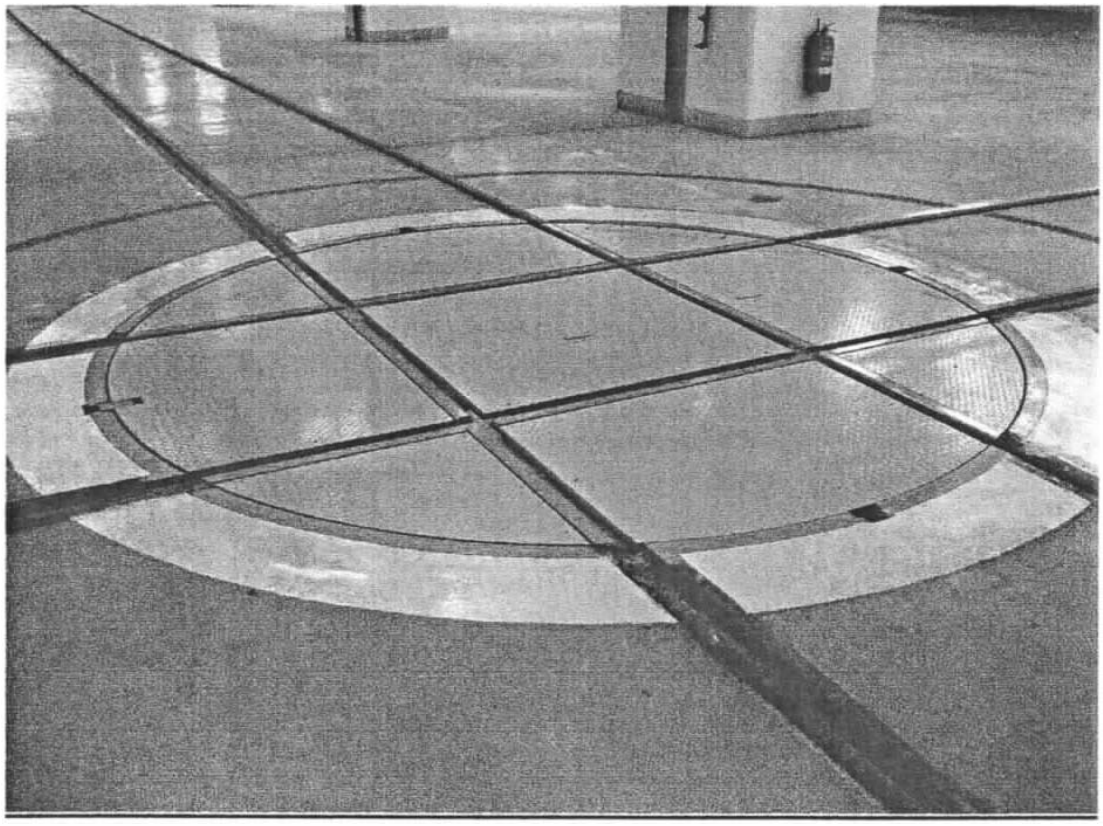

Figure 10. : Actual Bogie Turntable.

7. Concrete foundation for Bogie Turntable.

General : Foundation system is configured to meet the needs of both Safety load 10 tons of bogie and Appropriate standard of Civil works. The design and materials of construction, it's important to have a process control from expert. Supplier may supply the domestic construction including raw material. “SRT”/“SRTET” be recognized and affirmed for Concrete foundation and Construction work from a certified engineer who holds a license by “COE”.

The basis requirement shall meet as below:

7.1 Supplier must designed proper specification of Concrete foundation and response Civil work according to standard construction with well condition for support load on Turn Table (10 Tons of one bogie).

7.2 “SRT”/“SRTET” provide reference copies of Civil & Construction drawings as current state of Building following as below (ATTACHMENT A):

- 7.2.1 ATTACHMENT A1 “DEPOT ROLLING STOCK WORKSHOP GROUND FLOOR FRAMING PLAN ZONE 8 (SHEET 8/10)”
- 7.2.2 ATTACHMENT A2 “DEPOT ROLLING STOCK WORKSHOP BOTTOM SLAB REINFORCEMENT EL.+37.42 ZONE 14 (SHEET 2/2)”
- 7.2.3 ATTACHMENT A3 “DEPOT ROLLING STOCK WORKSHOP TOP SLAB REINFORCEMENT EL.+37.42 ZONE 15 (SHEET 1/2)”
- 7.2.4 ATTACHMENT A4 “DEPOT ROLLING STOCK WORKSHOP BOTTOM SLAB REINFORCEMENT EL.+37.42 ZONE 17 (SHEET 2/2)”
- 7.2.5 ATTACHMENT A5 “DEPOT ROLLING STOCK WORKSHOP TOP SLAB REINFORCEMENT EL.+37.42 ZONE 18 (SHEET 1/2)”
- 7.2.6 ATTACHMENT A6 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 15”
- 7.2.7 ATTACHMENT A7 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 16”
- 7.2.8 ATTACHMENT A8 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 17”
- 7.2.9 ATTACHMENT A9 “DEPOT WASTE WATER TREATMENT (ROLLING STOCK)”
- 7.2.10 ATTACHMENT A10 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 21”
- 7.2.11 ATTACHMENT A11 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 22”
- 7.2.12 ATTACHMENT A12 “DEPOT ROLLING STOCK WORKSHOP, WHEEL REPROFILING and TRAINWASH-CLEANING FIRST FLOOR PLAN (ZONE I) (SHEET 9 OF 10)”
- 7.2.13 ATTACHMENT A13 “DEPOT ROLLING STOCK WORKSHOP, WHEEL REPROFILING and TRAINWASH-CLEANING FIRST FLOOR PLAN (ZONE G) (SHEET 7 OF 10)”

7.3 After Supplier signed the contract/received Purchase order, they must submit As built Drawings and completed details of Concrete foundation for Bogie Turntable to “SRT”/“SRTET” within fifteen (15) days.

7.4 The final of As built Drawings from (7.3) is acceptance and approval from engineer (he/she is holding with a valid second class level of Engineer license from “COE”).

7.5 The Concrete foundation can be proceeded after “SRT”/“SRTET” agreed in any Term and Condition refer from (7.3) and (7.4).

7.6 All Concrete foundation have to finished before Bogie Turntable ready to install not less than (ninety) 90 days or follow Concrete testing if available.

7.7 Concrete testing report should be done before installed of Bogie Turntable.

7.8 Floor finishing is make the same pattern of previous state. Coating material and color type is upon "SRT"/ "SRTET" requirement.

7.9 SRTET" allowed Supplier to explore the area which beneficial for support civil work and prepared in various ways according to (7.1) and (7.2).

7.10 During construction period, supplier have to fixed authorized person at least one (1) person who is supervised and controlled onsite construction working according to safety manner. "SRT"/ "SRTET" required at least engineer level with Engineering license from "COE" or authorized deputy/representative.

7.11 During construction and Civil work if any defected are found on TRACKs/Facilities system/Utilities system and Equipments or Devices, supplier must be notified to "SRT"/"SRTET" within seven (7) days. However, if these defected not from existing material defective then "SRT"/"SRTET" will make claim noticed to Supplier.

7.12 If detail submission of (7.3) need to be updated after proceeding or during work is running. Supplier must have informed to "SRT"/"SRTET" by a letter with reasonable and attached copies of update drawing and detail. After "SRT"/"SRTET" agreed by confirmation supplier can performed accordingly.

7.13 According to a surveying are found to the structure of the whole or part to be prepared to renovate or rebuilt the existing structure to compliance with engineering principle. Supplier must implement and adhere to standards of construction which can not be used as an excuse or a reason to avoid the decline in contract operations.

8. Safety measures, Regulation and Testing.

General : The standard Safety measures, Regulation and Testing shall be subject to inspection or test by the Commercial alliance prior to acceptance. In the even supplier of manufacturer ,equipment or some defective in material or workmanship or otherwise not in conformity with specification requirement, the Commercial alliance shall have the right to reject the items or require acceptable correction at before shipment to “SRT”/“SRTET”.
The basis requirement shall meet as below:

8.1 The Bogie Turntable system is tested according to table 2

Function	Testing Detail
Rail width (at Turntable)	Report of standard gauge measurement.
Rotation performance	With and without Bogie 10 tons-Manual test by pushing from 0° to 360°.
Locking system	With and without Bogie 10 tons-Manual test at locking state of every 90°.
Rail connection overlap to inner rail of Turn table	With Bogie 10 tons moving from outer rail pass to inner rail of Turntable without obstruction.
Leveling and alignment	With and without Bogie 10 tons with measuring report.
Friction sound	With and without Bogie 10 tons-Manual test by pushing from 0° to 360°. Friction sound shall acceptable from “SRT”/“SRTET”.
The test above have to done in house and completed installation at SRTET’s site.	

Table 2. : Bogie Turntable Testing details.

9. Warranty and Claim.

General : The Bogie Turntable system shall be fully warranted against defective material and workmanship for a period of at least one (1) year. The warranty shall begin the date the system is completed of installation and commissioning at “SRTET” (Klongton Depot). A warranty Card or Certificate shall be provide accordingly.
The basis requirement have to meet as below:

9.1 The Bogie Turntable and Concrete foundation are required one (1) year of warranty after completed of commissioning and testing, refer effective date is form Acceptance record.

9.2 During warranty period, “SRT”/“SRTET” refuses any cost of expense from supplier if any cases out of warranty notice.

9.3 During warranty period if have any delayed of service activities from Supplier after both of parties are conclude, The mentioned expense and charge shall be paid to “SRT”/“SRTET” within one (1) month from the date of notification.

10. Transportation and Packing/Unpacking.

General : The supplier shall be fully responsible for all shipment and freight charge/sea voyage and filing freight claims lies is also. The consignee is “SRTET” (Klongton-Depot). Packing/Unpacking is done completely with any expense of supplier.
The basis requirement have to meet as below:

10.1 Packing from manufacturer, The Bogie Turntable shall be carefully packed and protected for sea voyage/Domestic logistic. Supplier must response for all parts be delivery to “SRTET” in good and proper conditions and ready to be installed.

10.2 Unpacking at “SRTET”, Supplier must response for Heavy machinery, auxiliary equipment and man power to unpacked and place any part at assign place. If damage of The Bogie Turntable are found or “SRT”/“SRTET” ’s property or asset are damage from unpacking and carrying-in cases, Supplier shall replace the defective part/property and asset’s value of all cost to “SRT”/“SRTET” with the least possible, root cause and reasonable delay letter.

11. Installation Facility.

General : "SRTET" provide facilities along with installation and construction of the civil works. Where one exists in our Main depot (Klongton-Depot). Supplier should be able to determine what facilities and other related equipment for pre-installed as well. "SRT"/"SRTET" denied compensation costs or otherwise as to the installation subject.

The basis facilities and Support unit as below:

11.1 Power Supply.

11.1.1 "SRTET" provide Electricity with AC 400 Volt/3 Phase., N+E, 50 Hz. are be able connected with power socket 3P+N+E as capacity 32 Amps type.

11.1.2 Each Power socket of (11.1.1) can reserved as needed.

11.1.3 If Supplier have requested capacity more higher than (11.1.1), they must provide auxiliary units like as Generator, Cable and Circuit Protection to support by themselves.

11.1.4 "SRTET" not allowed to modify Ring-main circuit from Main Distribution Panel/Distribution Board.

11.2 Overhead Crane.

11.2.1 "SRTET" provide Overhead Crane as below (only at installation area).

11.2.1.1 One (1) unit of Capacity SWL 10 Tons.

11.2.1.2 One (1) unit of Capacity SWL 3.2 Tons.

11.3 Temporary Workshop & Storage.

11.3.1 "SRTET" will provide temporary area that facilitate for working during installation as per scheduling.

11.4 Besides of (11.1), (11.2) and (11.3) must in charge by supplier.

12. Manual.

General : The Manual is standard principle of manufacturer which will be presented and delivered via ordering. “SRT”/“SRTET” prefer to have Operator manual, Parts book and Service manual which appropriate to their needs. All manual shall be furnished with each unit. In addition of all Parts book and manuals must be current with unit delivered.
The basis requirement have to meet as below:

12.1 Supplier have to delivery three (3) of copies of details concerned document to “SRT”/“SRTET”. The bilingual is Thai and English as per set of copies.
12.2 Copy pattern of document of (12.1) is prepared for “SRT”/“SRTET” with both of Hard copies and Soft copies.
12.3 Supplier must submit of (12.1) and (12.2) with in thirty (30) days after Acceptance record is done.

13. Commission and Training.

General : Commissioning must comply with the standard profile of each device. Supplier shall submit a detailed work prior to commissioning to “SRT”/“SRTET” within fifteen (15) days before Commissioning program started. The commissioning process must be completed prior to testing with “SRT”/“SRTET” on maximum load (herein is Motor Bogie 10 tons). If there is an error in the description of the commissioning, it must be completely revised and updated within a given period (supplier shall fixed that period). The training is a specific topic from the manufacturer, which must be filed to “SRT”/“SRTET” at least fifteen (15) days before start training course.

The basis requirement have to meet as below:

13.1 Supplier have to commissioning and local training at “SRTET” after installed to “SRT”/”SRTET” ’s engineer(s) not less than two (2) days.

13.2 Trainer(s) is authorized person from manufacturer only.

13.3 Training course expense, miscellaneous cost and concerned cost is response by Supplier.

14. Submission.

General : To submit documents related to an effective implementation and monitoring missions in the first act. “SRT”/“SRTET” will have to check the validity of the regulations and practices in force. The process is carried out according to regulations, both before and after. Supplier will be taken to comply with the requirements strictly.

The basis requirement have to meet as below:

14.1 Supplier must submit design drawings and specification of The Bogie Turntable within fifteen (15) days to “SRT”/“SRTET” after signed the contract/received Purchase order from “SRT”/“SRTET”.

14.1.1 Final Drawing and specification of The Bogie Turntable will approved from “SRT”/“SRTET” before supplier start to produced.

14.2 Supplier must send full details of Concrete foundation Drawing (As built Drawings) both of hard copy and soft copy to “SRT”/“SRTET” within fifteen (15) days after signed the contract/received Purchasing order from “SRT”/“SRTET” and refer to (7.3).

14.3 Concrete foundation have to approved by local engineer (Valid License from “COE” is a must and holding with second class level or higher) and make copy of inspection sheet to “SRT”/“SRTET” after he/she have done.

14.4 Concrete testing report should be done before installed The Bogie Turntable. Supplier will make a copies of report to “SRT”/“SRTET” before installed unit of The Bogie Turntable also.

14.5 All of any copies of final As built Drawings, Final of specification of The Bogie Turntable and Drawings, Concrete testing report, Leveling/Alignment report and commissioning/Testing Report are proved and confirmed with Official company’s sealing.

14.6 All of any Manual copies of (12).

14.7 The final release edition of (14.5) and (14.6) must submit to “SRT”/“SRTET” within thirty (30) days after acceptance record is done.

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END OF PART 2

PART 3

Extension Rail

1. Requirement.

General : Extension rail have in demand length to approx 10 meters per side, two (2) sides is as a needed with TRACK width of 1,435 mm. (“SRTET”-Airport Rail Link’s Standard gauge) for location is on TRACK 22 (T22), TRACK 23 (T23) and extension rail demand length to approx 4 meters per side, two (2) sides is as a needed with TRACK width of 1,435 mm. (“SRTET”-Airport Rail Link’s Standard gauge) for between New unit of Bogie Turntable to New location of Bogie Lifting. In addition to, supplier to be ensured of the concrete reinforced foundation to support the weight of vehicle on TRACK 22 (T22) and TRACK 23 (T23) and weight (ten) 10 tons of each bogies of New location of Bogie Lifting along the Extension rail.
The requirement as below:

1.1 Supplier must provide completed Install of Extension rail (UIC60 Steel rail standard).
1.2 Supplier must install to desired and proper position.
1.3 Civil work and Concrete foundation are response by supplier. The scope include Surveying, Designed, Materials providing, Construction, and Official approve follow engineering license from “CEO”.
1.4 Supplier shall certified completed of testing report.

2. Description of the individual Extension rail.

General : Extension rail are additional rail to support for full functional maintenance serviced of below:

- At TRACK 23 (T23), Rail connection points between end of existing TRACK and Start line of New Bogie Turntable.
- At TRACK 22 (T22), Rail connection points between end of existing TRACK and Start line of Existing Bogie Turntable.
- At new location of Bogie Lifting at TRACK 23 (T23), Rail connection points between end of New Bogie Turntable and Start point of beam support/rail bridge at Bogie Lifting.

TRACKs extension will be subject to the standards that define and support the load safely.
Extension rail must meet in details of each section are as follows:

2.1 Location of TRACK 23 (T23).
- 2.1.1 Extension rail connection points between end of Existing TRACK and Start line of New Bogie Turn Table.
- 2.1.2 Support the weight of vehicle along TRACK.
- 2.1.3 “SRT”/“SRTET” will supply mentioned rail profile as needed (UIC60 Steel rail standard).
- 2.1.4 Two (2) side of TRACK 23 (T23) in parallel is fixed.
- 2.1.5 Accessories and additional concerned devices for install is supply and done by supplier.
- 2.1.6 Rail welding is done by supplier (“SRT”/“SRTET” will accepted in standard method only).
- 2.1.7 Civil work and Concrete foundation on TRACK is necessary to approved.
- 2.1.8 Supplier must confirmed of (2.1.7) and do for construction in safety manner.

2.2 Location of TRACK 22 (T22).
- 2.2.1 Extension rail connection points between end of existing TRACK and Start line of Existing Bogie Turntable.
- 2.2.2 Support the weight of vehicle along TRACK.
- 2.2.3 “SRT”/“SRTET” will supply mentioned rail as needed (UIC60 Steel rail standard).
- 2.2.4 Two (2) side of TRACK 22 (T22) in parallel is fixed.
- 2.2.5 Accessories and additional concerned devices for install is supply and done by supplier.
- 2.2.6 Rail welding is done by supplier (“SRT”/“SRTET” will accepted in standard method only).
- 2.2.7 Civil work and Concrete foundation on TRACK is necessary to approved.
- 2.2.8 Supplier must confirmed of (2.2.7) and do for construction in safety manner.

2.3 New location of Bogie Lifting at TRACK 23 (T23).
- 2.3.1 Extension rail connection points between end of New Bogie Turntable and start point of beam support /Rail bridge of Bogie Lifting.
- 2.3.2 Support the weight of Bogie (ten) 10 tons along extend rail.
- 2.3.3 “SRT”/“SRTET” will supply mentioned rail as needed (UIC60 Steel rail standard).
- 2.3.4 Two (2) side of TRACK 23 (T23) in parallel is fixed.
- 2.3.5 Accessories and additional concerned devices for install is supply and done by supplier.
- 2.3.6 Rail welding is done by supplier (“SRT”/“SRTET” will accepted in standard method only).
- 2.3.7 Civil work and Concrete foundation on TRACK is necessary to approved.
- 2.3.8 Supplier must confirmed of (2.3.7) and do for construction in safety manner.

3. Concrete foundation for Extension rail.

General : Foundation system is configured to meet the needs of both Safety load and Appropriate standard of Civil works. The design and materials of construction, it's important to have a process control from expert. Supplier may supply the domestic construction including raw material. “SRT”/“SRTET” be recognized and affirmed for Concrete foundation and Construction work from a certified engineer who holds a license by “COE”.

The basis requirement shall meet as below:

3.1 Supplier must designed proper specification of Concrete foundation and response Civil work according to standard construction with well condition for Extension rail.

3.2 “SRT”/“SRTET” provide reference copies of Civil & Construction drawings as current state of TRACK Location following as below (ATTACHMENT A):

- 3.2.1 ATTACHMENT A1 “DEPOT ROLLING STOCK WORKSHOP GROUND FLOOR FRAMING PLAN ZONE 8 (SHEET 8/10)”
- 3.2.2 ATTACHMENT A2 “DEPOT ROLLING STOCK WORKSHOP BOTTOM SLAB REINFORCEMENT EL.+37.42 ZONE 14 (SHEET 2/2)”
- 3.2.3 ATTACHMENT A3 “DEPOT ROLLING STOCK WORKSHOP TOP SLAB REINFORCEMENT EL.+37.42 ZONE 15 (SHEET 1/2)”
- 3.2.4 ATTACHMENT A4 “DEPOT ROLLING STOCK WORKSHOP BOTTOM SLAB REINFORCEMENT EL.+37.42 ZONE 17 (SHEET 2/2)”
- 3.2.5 ATTACHMENT A5 “DEPOT ROLLING STOCK WORKSHOP TOP SLAB REINFORCEMENT EL.+37.42 ZONE 18 (SHEET 1/2)”
- 3.2.6 ATTACHMENT A6 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 15”
- 3.2.7 ATTACHMENT A7 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 16”
- 3.2.8 ATTACHMENT A8 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 17”
- 3.2.9 ATTACHMENT A9 “DEPOT WASTE WATER TREATMENT (ROLLING STOCK)”
- 3.2.10 ATTACHMENT A10 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 21”
- 3.2.11 ATTACHMENT A11 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 22”
- 3.2.12 ATTACHMENT A12 “DEPOT ROLLING STOCK WORKSHOP, WHEEL REPROFILING and TRAINWASH-CLEANING FIRST FLOOR PLAN (ZONE I) (SHEET 9 OF 10)”
- 3.2.13 ATTACHMENT A13 “DEPOT ROLLING STOCK WORKSHOP, WHEEL REPROFILING and TRAINWASH-CLEANING FIRST FLOOR PLAN (ZONE G) (SHEET 7 OF 10)”

3.3 After Supplier signed the contract/received Purchase order, they must submit As built Drawings and completed details of Concrete foundation for each section of Extension rail to “SRT”/“SRTET” within fifteen (15) days.

3.4 The final of As built Drawings from (3.3) is acceptance and approval from engineer (he/she is holding with a valid second class level of Engineer license from “COE”).

3.5 The Concrete foundation can be proceeded after “SRT”/“SRTET” agreed in any Term and Condition and refer from (3.3) and (3.4).

3.6 All Concrete foundation have to finished before testing by Rolling train and a Bogie (10 tons) not less than (ninety) 90 days or follow Concrete testing if available.

3.7 Concrete testing report should be done before testing by Rolling train and a Bogie (10 tons).

3.8 "SRTET" allowed Supplier to explore the area which beneficial for support civil work and prepared in various ways according to (3.1), (3.2) and (3.3).

3.9 Floor finishing is make the same pattern of previous state. Coating material type & color is upon "SRT"/"SRTET" requirement.

3.10 During construction period, supplier have to fixed authorized person at least one (1) person who is supervised and controlled onsite construction working according to safety manner. "SRT"/"SRTET" required at least engineer level with Engineering license from "COE" or authorized deputy/representative.

3.11 During construction and Civil work if any defected are found on TRACKs/Facilities system/Utilities system and Equipments or Devices, supplier must be notified to "SRT"/"SRTET" within seven (7) days. However, if these defected not from existing material defective then "SRT"/"SRTET" will make claim noticed to Supplier.

3.12 If detail submission of (3.3) need to be updated after proceeding or during work is running. Supplier must have informed to "SRT"/"SRTET" by a letter with reasonable and attached copies of update drawing and detail. After "SRT"/"SRTET" agreed by confirmation supplier can performed accordingly.

3.13 According to a surveying are found to improve the structure of the whole or part to be prepared to renovate or rebuilt the existing structure to compliance with engineering principle. Supplier must implement and adhere to standards of construction which can not be used as an excuse or a reason to avoid the decline in contract operations.

4. Accessories and device for Installation/Extension rail installed Method.

General : Accessories and device for installation is the responsibility of the supplier to supply and install a complete in short list same as drawing presented to the “SRT”/“SRTET”.
The basis requirement shall meet as below:

4.1 After Supplier signed the contract/received Purchase order, they must submit completed details of Specification and Technical data for each sets of Accessories and device to “SRT”/“SRTET” within fifteen (15) days.

4.2 Accessories and device for Installation can be proceeded after “SRT”/“SRTET” agreed in any Term and Condition and refer from (4.1).

4.3 Accessories and device for installation to a new and never been used before.

4.4 Accessories and device for installation with the disorder during installation. The replacement will be provided with the same or not less than previous.

4.5 Supplier must attach documentation of Procedure and how to install the extension rail as actual performed to “SRT”/“SRTET” together of (4.1).

4.6 Installation method can be proceeded after “SRT”/“SRTET” agreed in any Term and Condition and refer from (4.5).

5. Safety measures, Regulation and Testing.

General : Tested and certified to install the extension rail to abide by all the features and practical applications. Measuring are including the use of special tools and standard procedure . Supplier will be responsible for all the procedures and test reports.
The basis requirement shall meet as below:

5.1 Extension rail is tested according to table 3

Function	Testing Detail
Track width	Report of standard gauge measurement.
Leveling and Alignment	Report of Leveling measurement.
Rail joint welding	Report of NDT.
The test above have to done in house and completed installation at SRTET's site.	

Table 3. : Extension rail Testing details.

6. Warranty and Claim.

General : The Install of Extension rail shall be fully warranted against defective material (not include Rail) and workmanship for a period of at least one (1) year. The warranty shall begin the date the system is completed of installation and commissioning at “SRTET” (Klongton-Depot). A warranty Card or Certificate shall be provide accordingly.
The basis requirement have to meet as below:

6.1 The Install of Extension rail (except rail profile) consist of rail connection points, accessories and completed of civil work and Concrete foundation are required one (1) year of warranty after completed of commissioning and testing, refer effective date is form Acceptance sheet.

6.2 During warranty period, “SRT”/“SRTET” refuses any cost of expense from supplier if any cases out of warranty notice.

6.3 During warranty period if have any delayed of service activities from Supplier after both of parties are conclude, The mentioned expense and charge shall be paid to “SRT”/“SRTET” within one (1) month from the date of notification.

7. Installation Facility.

General : "SRTET" provide facilities along with installation and construction of the civil works. Where one exists in our Main depot (Klongton-Depot). Supplier should be able to determine what facilities and other related equipment for pre-installed as well. "SRT"/"SRTET" denied compensation costs or otherwise as to the installation subject.

The basis facilities and Support unit as below:

7.1 Power Supply.

7.1.1 "SRTET" provide Electricity with AC 400 Volt/3 Phase., N+E, 50 Hz. are be able connected with power socket 3P+N+E as capacity 32 Amps type.

7.1.2 Each Power socket of (7.1.1) can reserved as needed.

7.1.3 If Supplier have requested capacity more higher than (7.1.1), they must provide auxiliary units like as Generator, Cable and Circuit Protection to support by themselves.

7.1.4 "SRTET" not allowed to modify Ring-main circuit from Main Distribution Panel/Distribution Board.

7.2 Overhead Crane.

7.2.1 "SRTET" provide Overhead Crane as below (only at installation area).

7.2.1.1 One (1) unit of Capacity SWL 10 Tons.

7.2.1.2 One (1) unit of Capacity SWL 3.2 Tons.

7.3 Temporary Workshop & Storage.

7.3.1 "SRTET" will provide temporary area that facilitate for working during installation as per scheduling.

7.4 Besides of (7.1), (7.2) and (7.3) must in charge by supplier.

8. Submission.

General : To submit documents related to an effective implementation and monitoring missions in the first act. “SRT”/“SRTET” will have to check the validity of the regulations and practices in force. The process is carried out according to regulations, both before and after. Supplier will be taken to comply with the requirements strictly.

The basis requirement have to meet as below:

8.1 Supplier must submit design drawings and specification of Accessories and device for installation/ Extension rail installed Method within fifteen (15) days to “SRT”/“SRTET” after signed the contract/received Purchase order from “SRT”/“SRTET”.

8.1.1 Final Drawing and specification of Accessories and device for installation/ Extension rail installed Method will approved from “SRT”/“SRTET” before supplier proceeding.

8.2 Supplier must send full details of Concrete foundation Drawing (As built Drawings) both of hard copy and soft copy to “SRT”/“SRTET” within fifteen (15) days after signed the contract/received Purchasing order from “SRT”/“SRTET” and refer to (3.3).

8.3 Concrete foundation have to approved by local engineer (Valid License from “COE” is a must and holding with second class level or higher) and make copy of inspection sheet to “SRT”/“SRTET” after he/she have done.

8.4 Concrete testing report should be done before installed Extension rail. Supplier will make a copies of report to “SRT”/“SRTET” before installed unit of Extension rail also.

8.5 All of any copies of final As built Drawings, Final of specification Accessories and device, Concrete testing report, Leveling/Alignment report and commissioning/Testing Report are proved and confirmed with Official company’s sealing.

8.6 The final release edition of (8.5) must submit to “SRT”/“SRTET” within thirty (30) days after acceptance record is done.

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END OF PART 3

PART 4

Bogie Lifting Relocated

1. Requirement.

General : “SRT”/“SRTET” wish to move the current position of the Bogie Lifting at the same line of TRACK 23 (T23) by a direction counterclockwise 90° of the original. The Bogie Lifting is support for lift up a Bogie on weight of (ten) 10 tons. Supplier will be responsible for the demolition of the Concrete foundation, Civil work, Dismantle, Installation, Anti-roll off improvement and improve power supply installed in the proper location (if any).

The requirement as below:

1.1 Supplier must provide completed Dismantled of existing Bogie Lifting’s position.
1.2 Supplier must provide completed Installed of Bogie Lifting at new location.
1.3 Supplier must improved Anvils of lifting truck and rail bridge of existing system to upgrading with anti- roll off pocket preventing and Mechanical interlocking ’s function new location.
1.4 Supplier shall improve power supply to new location of Bogie Lifting in the proper location (if any).
1.5 Civil work and Concrete foundation are response by supplier. The scope include Surveying, Designed, Materials providing, Construction, Testing, Official approve from engineering license.
1.6 Supplier shall certified complete of testing report.

2. Description of Relocated.

General : Relocated Bogie Lifting is related to the corresponding area of the New Bogie Turntable at TRACK 23 (T23) and can be access from New Bogie Turntable enters to New location of Bogie Lifting directly. Bogie Lifting shall have new feature and character as below:

2.1 New direction.
- 2.1.1 Counterclockwise 90° from original.
- 2.1.2 Beam support (Rail bridge) must keep straight line and same level with Extension rail from end point of New Bogie Turntable to New location of Bogie Lifting.

2.2 Base unit Location.
- 2.2.1 Put in pit (New Concrete foundation).
- 2.2.2 Anchor blot fixed.

2.3 Rail Bridge Level.
- 2.3.1 New alignment at lowering is same level of extension rail at TRACK 23 (T23).

2.4 Main Power supply socket (if any).
- 2.4.1 Relocated existing Main power supply socket in pit if Concrete foundation obstructed.
- 2.4.2 New location is a properly.

2.5 Coverage (Checker plate's fabrication) at Bogie Lifting on ground floor is necessary to filled with safety topic, supplier must response fabricated and installed.
- 2.5.1 Supplier must submit Drawing & Specification of Coverage to "SRT"/"SRTET" for approval before fabricated.

2.6 Existing unit show as below figure 11, 12, 13 and 14.

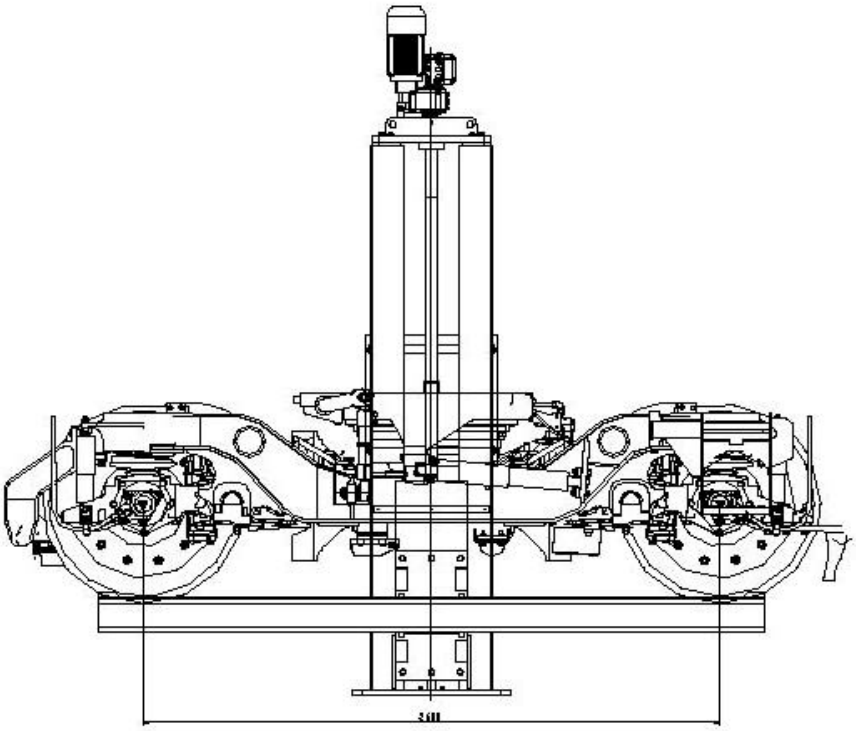

Figure 11 : Side view of Bogie Lifting.

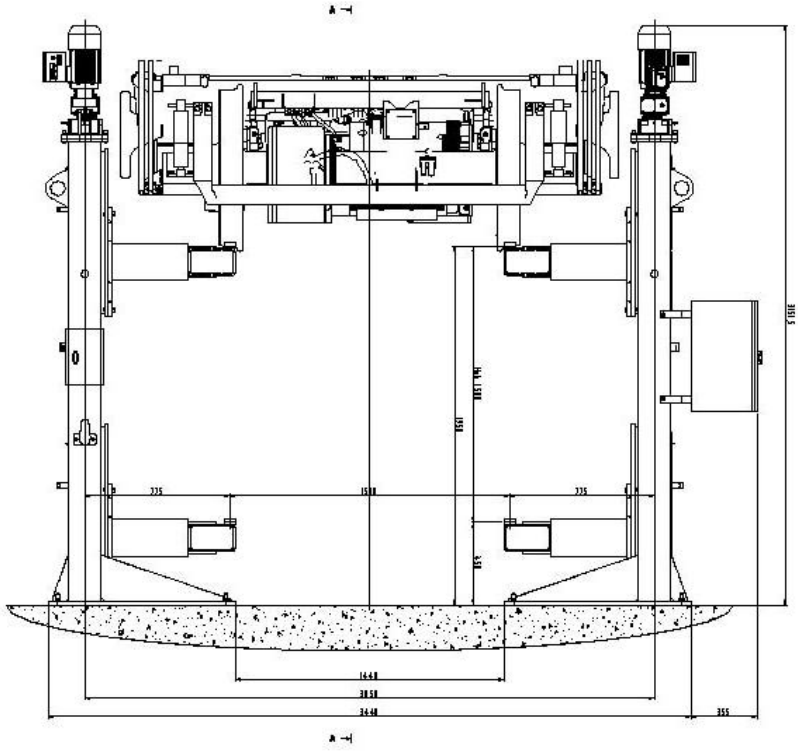

Figure 12 : Front view of Bogie Lifting.

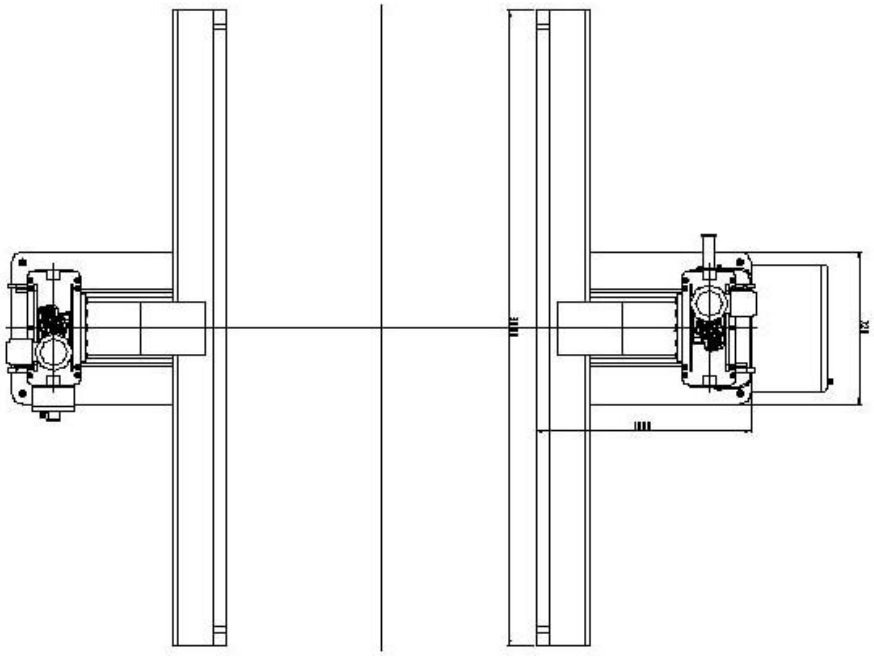

Figure 13 : Top view of Bogie Lifting.

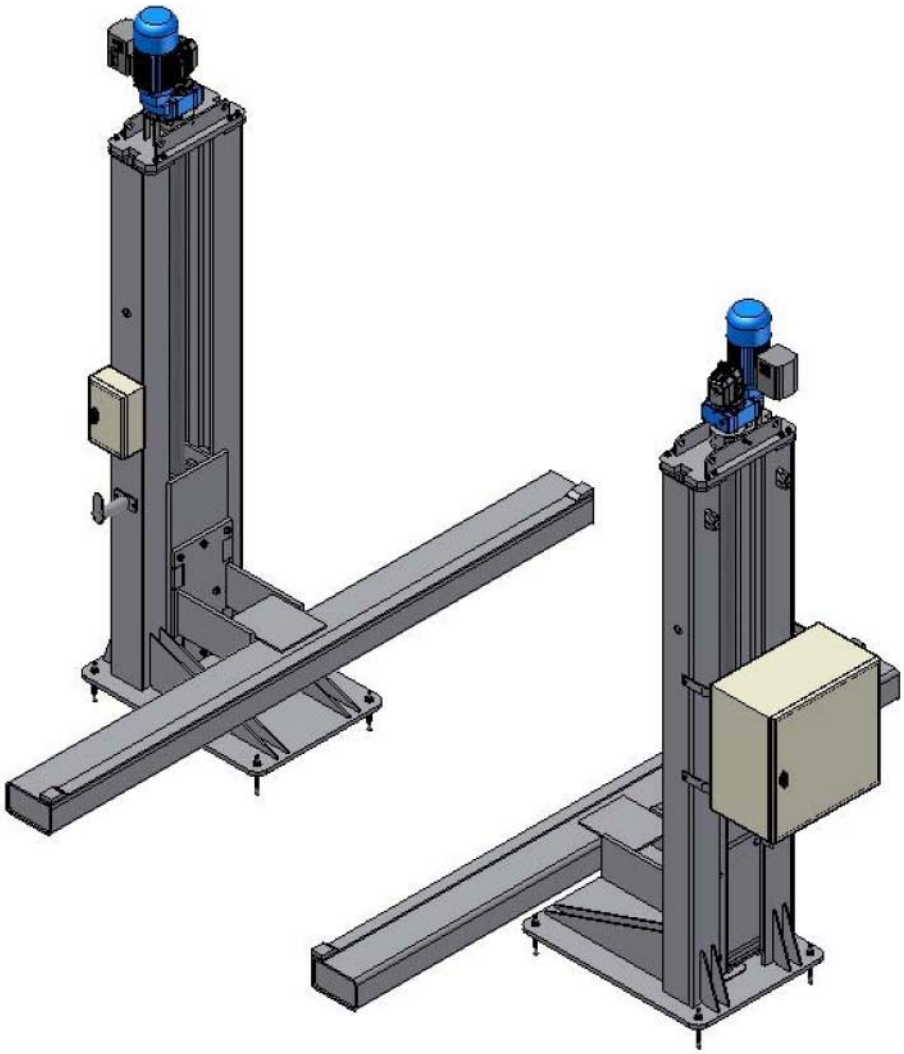

Figure 14 : 3D view of Bogie Lifting.

2.1 Technical data of Bogie Lifting show figure 15 as below :

Carrying capacity of each lifting jack		5,25 t
Carrying capacity of the entire lifting jack installation		10,5 t
Number of lifting jacks of the installation		2 pcs
In lower position from upper edge of rail		450 mm
Stroke		1500 mm
In upper position from lower edge of rail		1950 mm
Length of lifting beam		3000 mm
Lifting speed / Lowering speed		560 mm/min
Load arm	☒ fixed	☐ adjustable
Dimension from middle of screw up to front edge of base plate		805 mm
Intermittent duty		S2
Power output of each lifting jack		1,5 kW
Voltage		400 V
Frequency		50 Hz
Type of protection		IP 55
Max. sound level		<75 dB(A)
Weight of each lifting jack		950 kg
Driving gear	☒ fixed	☐ movable
	☐manual	☐ electrical
	☐ rail-bound	☐ moveable on concrete floor
max. surface pressure (with nominal load)		p_{max} = 0,5 N/mm²
max. permitted surface pressure of concrete B 25 DIN 1045:1988 <=> C20/25 DIN EN 206-1:2001 / DIN 1045-2:2001		$p_{max\ zul}$ = 7 N/mm²

Figure 15 : Technical data of Bogie Lifting.

3. Anti roll-off Improvement.

General : The anvil of the lifting truck is fixed arrangement . The anvil is connected to a rail bridge which serve for lifting a bogie (maximum is 10 tons). The existing rail bridge is equipped with anti-roll off pocket preventing the Bogie form installation inadvertently. Supplier must improve existing anti-roll off pocket upgrade to Mechanical safety interlocking. Supplier must design and make a function of Mechanical Interlocking.

Anti-roll off pocket shall have new feature as below:

3.1 Mechanical Interlocking.
- 3.1.1 Release function when need enter a bogie to Bogie Lifting.
- 3.1.2 Locking function when a bogie parking on Bogie Lifting.
- 3.1.3 Permanent and secure when lift up and lift down a bogie.
- 3.1.4 Release function when need remove a bogie out from Bogie Lifting.

3.2 Design and Fabrication.
- 3.2.1 Supplier must design of (3.1) and provide good material for fabrication.
- 3.2.2 Mechanical Interlocking are be used same as Bogie lifting for Railway's workshop.

3.3 Painting and primer layer.
- 3.3.1 Primer layer is under "SRT"/"SRTET" assigned.
- 3.3.2 Color for improve units shall be same as previous.

3.4 Supplier must send full detail of Anti roll-off with drawing and how to install to "SRT"/"SRTET" before proceeding.

3.5 According to a surveying are found to improve the Anti roll-off upgrading if some structure of the whole or part to be prepared to renovate or rebuilt the rail bridge structure to compliance with engineering principle. Supplier must implement and adhere to standards performed which can not be used as an excuse or a reason to avoid the decline in contract operations.

4. Power supply improvement.

General : Existing Power supply socket keep in a pit (cable in underground type). Otherwise, when relocated and fixed Bogie Lifting at new location then Supplier shall explore the place of the socket. if it is necessary to improve, new design and dismantle is a must. Supplier shall provide and install the equipment required to operate normally.

Power supply shall meet as below if necessary to improve:

4.1 Power cable.
- 4.1.1 Same specification of previous.
- 4.1.2 Cable must use a new if existing unit damage from dismantle or it is to short.
- 4.1.3 New cable of (4.1.2) must connect from Main supply circuit at Distribution panel refer with “SRTET” ‘s Building power schematic.

4.2 Underground pattern.
- 4.2.1 New design must do according to same pattern of previous state.
- 4.2.2 Equivalent component is allowed (under “SRT/SRTET” agreed).
- 4.2.3 Power socket is water proof protection.

4.3 Those Electrical equipments and accessories like as Power Cable, Cable conduit, etc.“SRT/SRTET” respected with Device standards, Installation and Safety discipline are concerned with some standard as follow.
- 4.3.1 EIT
- 4.3.2 MEA
- 4.3.3 TISI
- 4.3.4 NEMA
- 4.3.5 NEC
- 4.3.6 IEC
- 4.3.7 IEEE

5. Concrete foundation for Bogie Lifting.

General : Foundation system is configured to meet the needs of both Safety load and Appropriate standard of Civil works. The design and materials of construction, it's important to have a process control from expert. Supplier may supply the domestic construction including raw material. “SRT”/“SRTET” be recognized and affirmed for Concrete foundation and Construction work from a certified engineer who holds a license by “COE”.

The basis requirement shall meet as below:

5.1 Supplier must designed proper specification of Concrete foundation and response Civil work according to standard construction with well condition for Bogie Lifting.

5.2 “SRT”/“SRTET” provide reference copies of Civil & Construction drawings as current state of Area location following as below (ATTACHMENT A):

- 5.2.1 ATTACHMENT A1 “DEPOT ROLLING STOCK WORKSHOP GROUND FLOOR FRAMING PLAN ZONE 8 (SHEET 8/10)”
- 5.2.2 ATTACHMENT A2 “DEPOT ROLLING STOCK WORKSHOP BOTTOM SLAB REINFORCEMENT EL.+37.42 ZONE 14 (SHEET 2/2)”
- 5.2.3 ATTACHMENT A3 “DEPOT ROLLING STOCK WORKSHOP TOP SLAB REINFORCEMENT EL.+37.42 ZONE 15 (SHEET 1/2)”
- 5.2.4 ATTACHMENT A 4 “DEPOT ROLLING STOCK WORKSHOP BOTTOM SLAB REINFORCEMENT EL.+37.42 ZONE 17 (SHEET 2/2)”
- 5.2.5 ATTACHMENT A5 “DEPOT ROLLING STOCK WORKSHOP TOP SLAB REINFORCEMENT EL.+37.42 ZONE 18 (SHEET 1/2)”
- 5.2.6 ATTACHMENT A6 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 15”
- 5.2.7 ATTACHMENT A7 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 16”
- 5.2.8 ATTACHMENT A8 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 17”
- 5.2.9 ATTACHMENT A9 “DEPOT WASTE WATER TREATMENT (ROLLING STOCK)”
- 5.2.10 ATTACHMENT A10 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 21”
- 5.2.11 ATTACHMENT A11 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 22”
- 5.2.12 ATTACHMENT A12 “DEPOT ROLLING STOCK WORKSHOP, WHEEL REPROFILING and TRAINWASH-CLEANING FIRST FLOOR PLAN (ZONE I) (SHEET 9 OF 10)”
- 5.2.13 ATTACHMENT A13 “DEPOT ROLLING STOCK WORKSHOP, WHEEL REPROFILING and TRAINWASH-CLEANING FIRST FLOOR PLAN (ZONE G) (SHEET 7 OF 10)”

5.3 After Supplier signed the contract/received Purchase order, they must submit As built Drawings and completed details of Concrete foundation for Bogie Lifting to “SRT”/“SRTET” within fifteen (15) days.

5.4 The final of As built Drawings from (5.3) is acceptance and approval from engineer (he/she is holding with a valid second class level of Engineer license from “COE”).

5.5 The Concrete foundation can be proceeded after “SRT”/“SRTET” agreed in any Term and Condition and refer from (5.3) and (5.4).

5.6 All Concrete foundation have to finished before Bogie Lifting ready to install not less than (ninety) 90 days or follow Concrete testing if available.

5.7 Concrete testing report should be done before installed of Bogie Lifting.

5.8 "SRTET" allowed Supplier to explore the area which beneficial for support civil work and prepared in various ways according to (5.1), (5.2) and (5.3).

5.9 Floor finishing is make the same pattern of previous state. Coating material type & color is upon "SRT"/"SRTET" requirement.

5.10 During construction period, supplier have to fixed authorized person at least one (1) person who is supervised and controlled onsite construction working according to safety manner. "SRT"/"SRTET" required at least engineer level with Engineering license from "COE" or authorized deputy/representative.

5.11 During construction and Civil work if any defected are found on TRACKs/Facilities system/Utilities system and Equipments or Devices, supplier must be notified to "SRT"/"SRTET" within seven (7) days. However, if these defected not from existing material defective then "SRT"/"SRTET" will make claim noticed to Supplier.

5.12 If detail submission of (5.3) need to be updated after proceeding or during work is running. Supplier must have informed to "SRT"/"SRTET" by a letter with reasonable and attached copies of update drawing and detail. After "SRT"/"SRTET" agreed by confirmation supplier can performed accordingly.

5.13 According to a surveying are found to improve the structure of the whole or part to be prepared to renovate or rebuilt the existing structure to compliance with engineering principle. Supplier must implement and adhere to standards of construction which can not be used as an excuse or a reason to avoid the decline in contract operations.

6. Safety measures, Regulation and Testing.

General : Tested and certified to install new location of Bogie Lifting to abide by all the features and practical applications. Measuring are including the use of special tools and standard procedure. Supplier will be responsible for all the procedures and test reports.
The basis requirement shall meet as below:

6.1 Install new location of Bogie Lifting is tested according to table 4.

Function	Testing Detail
Rail bridge width	Report of standard gauge measurement.
Leveling and Alignment	Without a Bogie 10 tons. Report of Leveling measurement. Lift up and hold with a Bogie 10 tons during and after in 24 hrs. Report of Leveling measurement.
Anti roll-off	Test interlock function with Bogie by Lift-up and Lift-down.
Concrete Test	Report of concrete testing.
Electrical insulation test (if any)	Report of Insulation testing.
The test above have to done in house and completed installation at SRTET's site.	

Table 4 : New location of Bogie Lifting Testing details.

7. Warranty and Claim.

General : The Installed of Bogie Lifting, Anti roll-off Improvement, Power supply improvement (if any) and Concrete foundation shall be fully warranted against defective material and workmanship for a period of at least one (1) year. The warranty shall begin the date the system is completed of installation and commissioning at “SRTET” (Klongton-Depot). A warranty Card or Certificate shall be provide accordingly.
The basis requirement have to meet as below:

7.1 The Installed of Bogie Lifting at new location, Anti roll-off Improvement, Power supply improvement (if any) and Concrete foundation are required one (1) year of warranty after completed of commissioning and testing, refer effective date is form Acceptance sheet.

7.2 During warranty period, “SRT”/“SRTET” refuses any cost of expense from supplier if any cases out of warranty notice.

7.3 During warranty period if have any delayed of service activities from Supplier after both of parties are conclude, The mentioned expense and charge shall be paid to “SRT”/“SRTET” within one (1) month from the date of notification.

8. Installation Facility.

General : "SRTET" provide facilities along with installation and construction of the civil works. Where one exists in our Main depot (Klongton-Depot). Supplier should be able to determine what facilities and other related equipment for pre-installed as well. "SRT"/"SRTET" denied compensation costs or otherwise as to the installation subject.
The basis facilities and Support unit as below:

8.1 Power Supply.
- 8.1.1 "SRTET" provide Electricity with AC 400 Volt/3 Phase., N+E, 50 Hz. are be able connected with power socket 3P+N+E as capacity 32 Amps type.
- 8.1.2 Each Power socket of (8.1.1) can reserved as needed.
- 8.1.3 If Supplier have requested capacity more higher than (8.1.1), they must provide auxiliary units like as Generator, Cable and Circuit Protection to support by themselves.
- 8.1.4 "SRTET" not allowed to modify Ring-main circuit from Main Distribution Panel/Distribution Board.

8.2 Overhead Crane.
- 8.2.1 "SRTET" provide Overhead Crane as below (only at installation area).
  - 8.2.1.1 One (1) unit of Capacity SWL 10 Tons.
  - 8.2.1.2 One (1) unit of Capacity SWL 3.2 Tons.

8.3 Temporary Workshop & Storage.
- 8.3.1 "SRTET" will provide temporary area that facilitate for working during installation as per scheduling.

8.4 Besides of (8.1), (8.2) and (8.3) must in charge by supplier.

9. Submission.

General : To submit documents related to an effective implementation and monitoring missions in the first act. “SRT”/“SRTET” will have to check the validity of the regulations and practices in force. The process is carried out according to regulations, both before and after. Supplier will be taken to comply with the requirements strictly.

The basis requirement have to meet as below:

9.1 Supplier must submit design drawings and specification of Accessories and device for installation of Bogie Lifting at new location within fifteen (15) days to “SRT”/“SRTET” after signed the contract/received Purchase order from “SRT”/“SRTET”.

9.1.1 Final Drawing and specification of Accessories and device for installation of Bogie Lifting at new location will approved from “SRT”/“SRTET” before supplier proceeding.

9.2 Supplier must send full details of Concrete foundation Drawing (As built Drawings) both of hard copy and soft copy to “SRT”/“SRTET” within fifteen (15) days after signed the contract/received Purchasing order from “SRT”/“SRTET” and refer to (5.3).

9.3 Concrete foundation have to approved by local engineer (Valid License from “COE” is a must and holding with second class level or higher) and make copy of inspection sheet to “SRT”/“SRTET” after he/she have done.

9.4 Concrete testing report should be done before installed Bogie Lifting. Supplier will make a copies of report to “SRT”/“SRTET” before installed unit of Bogie Lifting also.

9.5 All of any copies of final As built Drawings, Final of specification Accessories and device, Concrete testing report, Leveling/Alignment report and commissioning/Testing Report are proved and confirmed with Official company’s sealing.

9.6 The final release edition of (9.5) must submit to “SRT”/“SRTET” within thirty (30) days after acceptance record is done.

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END OF PART 4

PART 5

Support system for Existing mobile lifting jacks at TRACK 22

1. Requirement.

General : “SRT”/“SRTET” wish to move the existing mobile Lifting Jack to TRACK 22 (T22) in case of TRACK 24 (T24) not ready/Maintenance program/obstruction by others. The capacity of existing mobile Lifting Jack is 12.5 Tons*16 units.
The requirement as below:

1.1 Supplier must do Civil work, Concrete foundation to support of 16 units of existing jack capacity 12.5 Tons*16 units when applied to TRACK 22 (T22).
1.2 Supplier must provide and installation to completed of Steel Plate for each jacks at TRACK 22 (T22).
1.3 Supplier must confirmed pit structure is safely after have been renovated or rebuilt Concrete foundation along the TRACK 22 (T22) and also existing facilities and waste water system in pit shall able used as a previous state.
1.4 Supplier must provide completed installation of Electrical supply and Control cable to support same function at new and alternate location of existing mobile Lifting Jack at TRACK 22 (T22) with parallel connected to Main control panel at TRACK 24 (24).
1.5 Civil work and Concrete foundation are response by supplier. The scope include Surveying, Designed, Materials providing, Construction, Testing, Official approve from engineering license.
1.6 Supplier shall certified testing report. The certified including Leveling, Concrete testing, Electricity Insulation testing, Load capacity approved.

2. Description of Support Base.

General : The TRACK 22 (T22) have a feature is similar to TRACK 24 (T24) which is kind of pits are specified. The structure may be different from TRACK 24 (T24) and the current setting will be the weight of the 4 cars of vehicle which has been used. An additional of sixteen (16) steel plates to distribute the weight for each current Existing mobile lifting jacks combined to Concrete foundation structuring. Most hi-light important, supplier to be studied in detail of current issued and structure to reflect capacity when lift up 4 cars of vehicle in safety manner.

If some current structure is safe and TRACK 22 (T22) was supported by above. Supplier is able to carry more locally but if any part of the original structure to be renovated or rebuilt, supplier can not be used as an excuse to deny responsibility.
Support system at TRACK 22 (T22) shall have the feature and character as below:

2.1 Concrete foundation.
- 2.1.1 Each concreted foundation [sixteen (16) place] must support and available for each units of exiting mobile lifting jack (Lifting Jack is 12.5 Tons*16 units).
- 2.1.2 The modernization and state of the art for Concrete foundation shall applied if necessary.

2.2 Steel Plate.
- 2.2.1 Sixteen (16) sets of new steel plate must applied and support between Load of each cars to Concrete foundation is locally on TRACK 22 (T22).
- 2.2.2 The modernization and state of the art for steel plates shall applied if necessary.

2.3 Pit.
- 2.3.1 The pit of TRACK 22 (T22) is must be used same as previous state with according to safety manner after renovate or rebuilt Concrete foundation along the TRACK.
- 2.3.2 If there is a need to improve the structure until the structure and strength of the wall at pit or braced weight change, supplier must be refreshed to reflect the new structure to support the weight along the pit.
- 2.3.3 The facilities and waste water system in pit shall make as same pattern if they were have change from (2.3.2).

3. Concrete foundation Improvement.

General : At TRACK 22 (T22) Foundation system is configured to meet the needs of both Safety load and appropriate standard of Civil works. The design and materials of construction, it's important to have a process control from expert. Supplier may supply the domestic construction including raw material. “SRT”/“SRTET” be recognized and affirmed for Concrete foundation and Construction work from a certified engineer who holds a license by “COE”. Position of foundations and Jacks are compare with existing current address of TRACK 24 (24).

The basis requirement shall meet as below:

3.1 Supplier must designed proper specification of Concrete foundation and response Civil work according to standard construction with well condition for existing mobile lifting jack (Lifting Jack is 12.5 Tons*16 units) on TRACK 22 (T22).

3.2 “SRT”/“SRTET” provide reference copies of Civil & Construction drawings as current state of Building following as below (ATTACHMENT A):

- 3.2.1 ATTACHMENT A1 “DEPOT ROLLING STOCK WORKSHOP GROUND FLOOR FRAMING PLAN ZONE 8 (SHEET 8/10)”
- 3.2.2 ATTACHMENT A2 “DEPOT ROLLING STOCK WORKSHOP BOTTOM SLAB REINFORCEMENT EL.+37.42 ZONE 14 (SHEET 2/2)”
- 3.2.3 ATTACHMENT A3 “DEPOT ROLLING STOCK WORKSHOP TOP SLAB REINFORCEMENT EL.+37.42 ZONE 15 (SHEET 1/2)”
- 3.2.4 ATTACHMENT A4 “DEPOT ROLLING STOCK WORKSHOP BOTTOM SLAB REINFORCEMENT EL.+37.42 ZONE 17 (SHEET 2/2)”
- 3.2.5 ATTACHMENT A5 “DEPOT ROLLING STOCK WORKSHOP TOP SLAB REINFORCEMENT EL.+37.42 ZONE 18 (SHEET 1/2)”
- 3.2.6 ATTACHMENT A6 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 15”
- 3.2.7 ATTACHMENT A7 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 16”
- 3.2.8 ATTACHMENT A8 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 17”
- 3.2.9 ATTACHMENT A9 “DEPOT WASTE WATER TREATMENT (ROLLING STOCK)”
- 3.2.10 ATTACHMENT A10 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 21”
- 3.2.11 ATTACHMENT A11 “DEPOT ROLLING STOCK WORKSHOP PILING AND FOOTING LOCATION ZONE 22”
- 3.2.12 ATTACHMENT A12 “DEPOT ROLLING STOCK WORKSHOP, WHEEL REPROFILING and TRAINWASH-CLEANING FIRST FLOOR PLAN (ZONE I) (SHEET 9 OF 10)”
- 3.2.13 ATTACHMENT A13 “DEPOT ROLLING STOCK WORKSHOP, WHEEL REPROFILING and TRAINWASH-CLEANING FIRST FLOOR PLAN (ZONE G) (SHEET 7 OF 10)”

3.3 After Supplier signed the contract/received Purchase order, they must submit As built Drawings and completed details of Concrete foundation for each sets of Jack to “SRT”/“SRTET” within fifteen (15) days.

3.4 The final of As built Drawings from (3.3) is acceptance and approval from engineer (he/she is holding with a valid second class level of Engineer license from “COE”).

3.5 The Concrete foundation can be proceeded after “SRT”/“SRTET” agreed in any Term and Condition and refer from (3.3) and (3.4).

3.6 All Concrete foundation have to finished before need to testing by existing mobile lifting jack ready to install not less than (ninety) 90 days or follow Concrete testing if available.

3.7 Concrete testing report should be done before installed (or for testing) of existing mobile lifting jack.

3.8 “SRTET” allowed Supplier to explore the area which beneficial for support civil work and prepared in various ways according to (3.1), (3.2) and (3.3).

3.9 Floor finishing is make the same pattern of previous state. Coating material type & color is upon “SRT”/“SRTET” requirement or refer with previous specification.

3.10 During construction period, supplier have to fixed authorized person at least one (1) person who is supervised and controlled onsite construction working according to safety manner. “SRT”/“SRTET” required at least engineer level with Engineering license from “COE” or authorized deputy/representative.

3.11 During construction and Civil work if any defected are found on TRACKs/Facilities system/Utilities system and Equipments or Devices, supplier must be notified to “SRT”/“SRTET” within seven (7) days. However, if these defected not from existing material defective then “SRT”/“SRTET” will make claim noticed to Supplier.

3.12 If detail submission of (3.3) need to be updated after proceeding or during work is running. Supplier must have informed to “SRT”/“SRTET” by a letter with reasonable and attached copies of update drawing and detail. After “SRT”/“SRTET” agreed by confirmation supplier can performed accordingly.

3.13 According to a surveying are found to improve the structure of the whole or part to be prepared to renovate or rebuilt the existing structure to compliance with engineering principle. Supplier must implement and adhere to standards of construction which can not be used as an excuse or a reason to avoid the decline in contract operations.

4. Steel Plate.

General : New sixteen (16) sets of Steel Plate is necessary to use force sharing the weight of each four (4) cars while being lifted by existing mobile lifting jack, is in use same of TRACK 24 (T24) and provide a stable foundation and footing system. New function of TRACK 22 (T22) must have same a stable system also. In work particular may take the feature of TRACK 24 (T24) or new created to better conform to the safety and suitability.

Steel Plate shall meet as below:

4.1 Supplier must designed proper specification of Steel Plate, Provided, Fabrication, installation and response Civil work according to standard construction with well condition to support existing mobile lifting jack (Lifting Jack is 12.5 Tons*16 units) at TRACK 22 (T22).

4.2 After Supplier signed the contract/received Purchase order, they must submit Drawings and completed details of Steel Plate for each sets of Jack to “SRT”/“SRTET” within fifteen (15) days.

4.3 The final of Drawings from (4.2) is acceptance and approval from engineer (he/she is holding with a valid second class level of Engineer license from “COE”) or combined together with statement and bill of quantities of (3).

4.4 The Sixteen (16) sets of Steel Plate can be proceeded after “SRT”/“SRTET” agreed in any Term and Condition and refer from (4.2) and (4.3).

4.5 During installation if any defected are found on TRACKs/Facilities system/Utilities system and Equipments or Devices, supplier must be notified to “SRT”/“SRTET” within seven (7) days. However, if these defected not from existing material defective then “SRT”/“SRTET” will make claim noticed to Supplier.

4.6 If detail submission of (4.2) need to be updated after proceeding or during work is running. Supplier must have informed to “SRT”/“SRTET” by a letter with reasonable and attached copies of update drawing and detail. After “SRT”/“SRTET” agreed by confirmation supplier can performed accordingly.

5. Pit stability.

General : Existing Pit in TRACK 22 (22) must be updated to be strong and stable due to structure and foundation have been modified or use the same without improvement but must be confirmed and have a certify by the expert. The facilities and waste water system (underground of pit) shall operated same as previous state.

Pit shall meet as below:

5.1 Supplier must offer the possibility for its strong and steady with the submission together of (3) if there is a need to improve or strengthen the walls of pit, supplier shall submit the drawing and the process updated simultaneously.

5.2 "SRTET" allowed Supplier to explore the area which beneficial for support civil work and prepared in various ways according to (5.1).

5.3 The Facilities such as electrical system, lighting systems, compress air system and waste water systems must be able to operate normally after update the structures or improve the strength of the pit.

5.4 Floor finishing and wall are make the same pattern of previous state. Coating material type & color is upon "SRT"/"SRTET" requirement.

5.5 During construction and Civil work if any defected are found on TRACKs/Facilities system/Utilities system and Equipments or Devices, supplier must be notified to "SRT"/"SRTET" within seven (7) days. However, if these defected not from existing material defective then "SRT"/"SRTET" will make claim noticed to Supplier.

5.6 If detail submission of (5.1) need to be updated after proceeding or during work is running. Supplier must have informed to "SRT"/"SRTET" by a letter with reasonable and attached copies of update drawing and detail. After "SRT"/"SRTET" agreed by confirmation supplier can performed accordingly.

5.7 According to a surveying are found to improve the structure of pit stability of the whole or part to be prepared to renovate or rebuilt the existing structure to compliance with engineering principle. Supplier must implement and adhere to standards of construction which can not be used as an excuse or a reason to avoid the decline in contract operations.

6. Power supply and Control system.

General : At new and alternate location of existing mobile lifting jack at TRACK 22 (22) might include electric supply and controlling same as electrical drawing of the original virtual address of the control power in different positions of Jacks. The specification must have at least the same type of products and be working at environment of TRACK 22 (T22). However, the Control cabinet still fixed at TRACK 24 (T24) with same power supply and controlled to drive unit of each jacks at TRACK 22 (T22).
Power supply and Control system shall meet as below:

6.1 Power supply.
- 6.1.1 Power supply used from current Control cabinet at TRACK 24 (T24).

6.2 Control cable and Connector/socket.
- 6.2.1 Supplier shall provide actual length, Installation and termination of new control cable from Current Control cabinet at TRACK 24 (T24) position to new location of each jacks at TRACK 22 (T22).
- 6.2.2 The specification and details of equipment shall submit to "SRT/SRTET" with in fifteen (15) days after Supplier signed the contract/received Purchase order.
- 6.2.3 The specification and details of equipment can be proceeded after "SRT"/"SRTET" agreed in any Term and Condition and refer from (6.2.2).
- 6.2.4 Control cable and Connector/socket is the new and never been used before. Specification is equal or better than existing.
- 6.2.5 All concerned accessories is responsible by Supplier.
- 6.2.6 During installation and termination if any defected are found on TRACKs/Facilities system/Utilities system and Equipments or Devices, supplier must be notified to "SRT"/"SRTET" within seven (7) days. However, if these defected not from existing material defective then "SRT"/"SRTET" will make claim noticed to Supplier.
- 6.2.7 If detail submission of (6.2.2) need to be updated after proceeding or during work is running. Supplier must have informed to "SRT"/"SRTET" by a letter with reasonable and attached copies of update drawing and detail. After "SRT"/"SRTET" agreed by confirmation supplier can performed accordingly.

6.3 Underground pattern.
- 6.3.1 Supplier shall designed, provide and Installation for cable underground root pattern from current Control panel at TRACK 24 (T24) to each sockets or connectors of individual jacks at TRACK 22 (T22).
- 6.3.2 The respect underground pattern as needed shall submit details to "SRT/SRTET" with in fifteen (15) days after Supplier signed the contract/received Purchase order.
- 6.3.3 The specification and details of equipment can be proceeded after "SRT"/"SRTET" agreed in any Term and Condition and refer from (6.3.2).
- 6.3.4 Concerned equipment is the new and never been used before.
- 6.3.5 All concern accessories is responsible by Supplier.
- 6.3.6 During installation if any defected are found on TRACKs/Facilities system/Utilities system and Equipments or Devices, supplier must be notified to "SRT"/"SRTET" within seven (7) days. However, if these defected not from existing material defective then "SRT"/"SRTET" will make claim noticed to Supplier.

6.3.7 If detail submission of (6.3.2) need to be updated after proceeding or during work is running. Supplier must have informed to “SRT”/“SRTET” by a letter with reasonable and attached copies of update drawing and detail. After “SRT”/“SRTET” agreed by confirmation supplier can performed accordingly.

6.4 Those Electrical equipments and accessories like as Control cable, Cable conduit, etc.“SRT/SRTET” respected with Device standards, Installation and Safety discipline are concerned with some standard as follow.

6.4.1 EIT

6.4.2 MEA

6.4.3 TISI

6.4.4 NEMA

6.4.5 NEC

6.4.6 IEC

6.4.7 IEEE

6.5 According to a surveying are found to improve the structure of underground pattern of the whole or part to be prepared to renovate or rebuilt the existing structure to compliance with engineering principle. Supplier must implement and adhere to standards of Electrical construction which can not be used as an excuse or a reason to avoid the decline in contract operations.

7. Safety measures, Regulation and Testing.

General : Tested and certified Support system and control function of existing mobile lifting jack to abide by all the features and practical applications. Mobile lifting jack may testing in control function which to approved termination is correctly. Measuring are including the use of special tools and standard procedure. Supplier will be responsible for all the procedures and test reports.
The basis requirement shall meet as below:

7.1 Support system is tested according to table 4.

Function	Testing Detail
Mobile lifting jack control functions (to approved termination are corrected).	Test group operation. Test individual each Jacks. Test Emergency loop and release.
Rail width (on TRACK)	Report of standard gauge measurement.
Leveling and Alignment	Report of Leveling at Before and after hold up the 4 cars in 24 hours.
Concrete Test	Report of concrete testing
Electrical insulation test (if any)	Report of Insulation testing
The test above have to done in house and completed installation at SRTET's site.	

Table 4 : Support system for Existing mobile lifting jacks at TRACK 22 (T22) Testing details.

7.2 Testing Existing mobile lifting jack at TRACK 22 (22), in the machine test function is performed by "SRTET" but will coordinate with supplier to confirm the termination of the work carried out by supplier have to meet a completed.

7.3 If some defect of testing and verify of (7.2) have found and both parties are conclude in term of termination defected, supplier must correct and complete prior to test lift up the vehicle.

8. Warranty and Claim.

General : The Support system(except pit if not renovate) and cabling shall be fully warranted against defective material and workmanship for a period of at least one (1) year. The warranty shall begin the date the system is completed of installation and commissioning at “SRTET” (Klongton-Depot). A warranty Card or Certificate shall be provide accordingly.
The basis requirement have to meet as below:

8.1 The Support system for Existing mobile lifting jacks at TRACK 22 (T22) and Concrete foundation is required one (1) year of warranty after completed of commissioning and testing, refer effective date is form Acceptance sheet.

8.2 During warranty period, “SRT”/“SRTET” refuses any cost of expense from supplier if any cases out of warranty notice.

8.3 During warranty period if have any delayed of service activities from Supplier after both of parties are conclude, The mentioned expense and charge shall be paid to “SRT”/“SRTET” within one (1) month from the date of notification.

9. Installation Facility.

General : "SRTET" provide facilities along with installation and construction of the civil works. Where one exists in our Main depot (Klongton-Depot). Supplier should be able to determine what facilities and other related equipment for pre-installed as well. "SRT"/"SRTET" denied compensation costs or otherwise as to the installation subject.
The basis facilities and Support unit as below:

9.1 Power Supply.
- 9.1.1 "SRTET" provide Electricity with AC 400 Volt/3 Phase., N+E, 50 Hz. are be able connected with power socket 3P+N+E as capacity 32 Amps type.
- 9.1.2 Each Power socket of (9.1.1) can reserved as needed.
- 9.1.3 If Supplier have requested capacity more higher than (9.1.1), they must provide auxiliary units like as Generator, Cable and Circuit Protection to support by themselves.
- 9.1.4 "SRTET" not allowed to modify Ring-main circuit from Main Distribution Panel/Distribution Board.

9.2 Overhead Crane.
- 9.2.1 "SRTET" provide Overhead Crane as below (only at installation area).
  - 9.2.1.1 One (1) unit of Capacity SWL 10 Tons.
  - 9.2.1.2 One (1) unit of Capacity SWL 3.2 Tons.

9.3 Temporary Workshop & Storage.
- 9.3.1 "SRTET" will provide temporary area that facilitate for working during installation as per scheduling.

9.4 Besides of (9.1), (9.2) and (9.3) must in charge by supplier.

10. Submission.

General : To submit documents related to an effective implementation and monitoring missions in the first act. “SRT”/“SRTET” will have to check the validity of the regulations and practices in force. The process is carried out according to regulations, both before and after. Supplier will be taken to comply with the requirements strictly.

The basis requirement have to meet as below:

10.1 Supplier must submit design drawings and specification of Accessories and device for installation of Support system for Existing mobile lifting jacks at TRACK 22 (T22) within fifteen (15) days to “SRT”/“SRTET” after signed the contract/received Purchase order from “SRT”/“SRTET”.

10.1.1 Final Drawing and specification of Accessories and device for installation of Support system for Existing mobile lifting jacks at TRACK 22 (T22) will approved from “SRT”/“SRTET” before supplier proceeding.

10.2 Supplier must send full details of Concrete foundation Drawing (As built Drawings) both of hard copy and soft copy to “SRT”/“SRTET” within fifteen (15) days after signed the contract/received Purchasing order from “SRT”/“SRTET” and refer to (3.3).

10.3 Concrete foundation have to approved by local engineer (Valid License from “COE” is a must and holding with second class level or higher) and make copy of inspection sheet to “SRT”/“SRTET” after he/she have done.

10.4 Concrete testing report should be done before installed Existing mobile lifting jacks at TRACK 22 (T22). Supplier will make a copies of report to “SRT”/“SRTET” before installed unit of Existing mobile lifting jacks at TRACK 22 (T22) also.

10.5 Leveling and alignment report must submit to “SRT”/“SRTET” after commissioning and testing done completely.

10.6 All of any copies of final As built Drawings, Final of specification Accessories and device, Concrete testing report, Leveling/Alignment report and commissioning/Testing Report are proved and confirmed with Official company’s sealing.

10.7 The final release edition of (10.6) must submit to “SRT”/“SRTET” within thirty (30) days after acceptance record is done.

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END OF PART 5

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END OF SPECIFICATION